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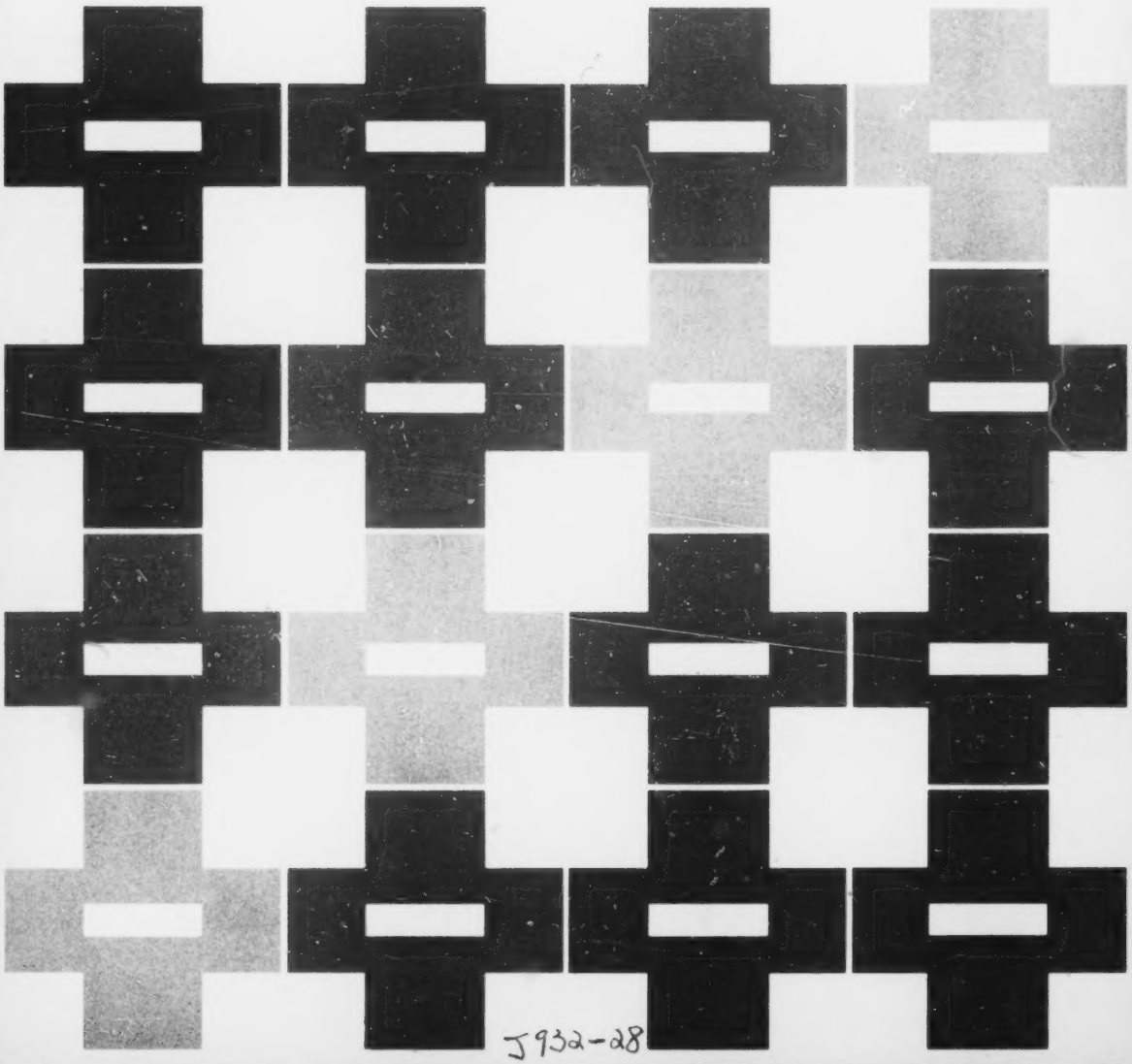
The Changing Distribution of Federal Taxes: 1975-1990



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A CBO STUDY

THE CHANGING DISTRIBUTION OF FEDERAL TAXES: 1975-1990

The Congress of the United States
Congressional Budget Office

PREFACE

In the past decade, the Congress has enacted a series of significant changes in federal tax laws. Over the same period, the level and distribution of incomes have also changed. This report examines how changes in tax laws and changes in income have affected the distribution of federal tax liabilities. This study was prepared at the request of Senator George J. Mitchell of the Committee on Finance, United States Senate. In accordance with the mandate of the Congressional Budget Office (CBO) to provide objective analysis, the report offers no recommendations.

Richard Kasten and Frank Sammartino of the Tax Analysis Division prepared the report under the direction of Rosemary Marcuss and Eric Toder. A number of people inside and outside CBO reviewed drafts and provided valuable criticism and suggestions. They include Marilyn Flowers, Robert Hartman, George Iden, Donald Kiefer, Stephen Long, Thomas Neubig, Joseph Pechman, John Sturrock, and Roberton Williams. Assistance in preparing the tables and figures was provided by Jeffrey Miller. Francis Pierce edited the manuscript. Linda Brockman set the paper up for publication. Kathryn Quattrone prepared the final draft for publication.

Edward M. Gramlich
Acting Director

October 1987

CONTENTS

	SUMMARY	xiii
I	INTRODUCTION	1
	Topics Not Covered *2*	
II	OVERVIEW OF FEDERAL REVENUES AND FEDERAL TAX LEGISLATION, 1975-1990	5
	The Level and Composition of Federal Revenues *5* The Individual Income Tax *6* Social Insurance Taxes *12* The Corporate Income Tax *14* Excise Taxes *14*	
III	WHO PAYS THE TAXES?	19
	Tax Incidence *19* Incidence Assumptions Used in This Study *24*	
IV	MEASURING FAMILY INCOME	27
	Defining Family Income *27* The Distribution of Family Income in 1977, 1984, and 1988 *35*	
V	THE DISTRIBUTION OF FEDERAL TAXES IN 1977, 1984, AND 1988	41
	Comparisons of Federal Taxes Over Years *41*	
VI	THE EFFECT OF TAX LAW CHANGES ON THE DISTRIBUTION OF FEDERAL TAXES	49
	Constant 1984 Income Comparisons *49* Constant 1988 Income Comparisons *54*	

APPENDIXES

A Additional Detail on the Distribution of Income *63*

B Additional Detail on the Distribution of Federal Taxes *69*

C Gini Coefficients and Suits Indexes *75*

TABLES

1.	Exemptions, Standard Deductions, and Credits for the Individual Income Tax, 1975-1990	9
2.	Social Security Contribution Rates and Maximum Taxable Earnings, 1975-1990	13
3.	Corporate Income and Taxes, 1975-1990	15
4.	Derivation of Family Income for 1977 and 1984	30
5.	Distribution of Total Family Income by Population Decile	37
6.	Average Family Income in Each Population Decile, by Year and Treatment of Corporate Tax	39
7.	Effective Federal Tax Rates, by Population Decile: Corporate Income Tax Allocated to Capital Income	47
8.	Effective Federal Tax Rates, by Population Decile: Corporate Income Tax Allocated to Labor Income	48
9.	Effective Federal Tax Rates, by Population Decile, With Constant 1984 Incomes: Corporate Income Tax Allocated to Capital Income	52
10.	Effective Federal Tax Rates, by Population Decile, With Constant 1984 Incomes: Corporate Income Tax Allocated to Labor Income	53
11.	Effective Federal Tax Rates, by Population Decile, With Constant 1988 Incomes: Corporate Income Tax Allocated to Capital Income	59
12.	Effective Federal Tax Rates, by Population Decile, With Constant 1988 Incomes: Corporate Income Tax Allocated to Labor Income	60
A-1.	Minimum Income Level in Each Population Decile, by Year and Treatment of Corporate Tax	64
A-2.	Distribution of Family Income from Each Source of Income, by Population Decile, With Corporate Income Tax Allocated to Capital Income	65

A-3.	Distribution of Family Income from Each Source of Income, by Population Decile, With Corporate Income Tax Allocated to Labor Income	66
A-4.	Distribution of Family Income by Source of Income for Each Population Decile, With Corporate Income Tax Allocated to Capital Income	67
A-5.	Distribution of Family Income by Source of Income for Each Population Decile, With Corporate Income Tax Allocated to Labor Income	68
B-1.	Distribution of Family Income and of Federal Tax Payments by Population Decile, With Corporate Income Tax Allocated to Capital Income	70
B-2.	Distribution of Family Income and of Federal Tax Payments by Population Decile, With Corporate Income Tax Allocated to Labor Income	71
B-3.	Distribution of Total Federal Taxes Paid, by Type of Tax, for Each Population Decile, With Corporate Income Tax Allocated to Capital Income	72
B-4.	Distribution of Total Federal Taxes Paid, by Type of Tax, for Each Population Decile, With Corporate Income Tax Allocated to Labor Income	73
C-1.	Gini Coefficients and Suits Indexes	77

FIGURES

S-1.	Effective Federal Tax Rates by Population Decile	xv
S-2.	Share of Total Federal Revenues by Source, 1975-1990	xvi
S-3.	Effective Tax Rates by Population Decile: Individual Income Tax and Social Insurance Taxes	xviii
S-4.	Effective Tax Rates by Population Decile: Corporate Income Tax and Excise Taxes	xx
S-5.	Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes	xxii
1.	Revenues by Source as Shares of GNP, 1975-1990	6
2.	Ratio of Income Tax Threshold to Poverty Level, 1975-1990	10
3.	Individual Income Tax as a Percent of Taxable Income	12
4.	Federal Excise Tax Rates, 1975-1990	16
5.	Effective Federal Tax Rates by Population Decile	42
6.	Effective Federal Tax Rates by Population Decile: Individual Income Tax and Social Insurance Taxes	44
7.	Effective Federal Tax Rates by Population Decile, Corporate Income Tax and Excise Taxes	46
8.	Effective Federal Tax Rates by Population Decile, 1984, Under Tax Laws Adjusted to 1984 Incomes	51
9.	Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes	55

10.	Effective FederalTax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes: Individual Income Tax and Social Insurance Taxes	56
11.	Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes: Corporate Income Tax and Excise Taxes	58
C-1.	Lorenz Curve	76
C-2.	Tax Concentration Curve	76

SUMMARY

This study measures changes in the distribution of combined federal tax liabilities by family income classes for three representative years during the 1975-1990 period. The years chosen for analysis were 1977, 1984, and 1988. The two historical years were years of relatively high growth in gross national product, declining unemployment rates, and rising but relatively modest rates of inflation. The years chosen are separated by important changes in federal tax laws. In 1977, the Tax Reform Act of 1978 and the Economic Recovery Tax Act of 1981 had not yet been enacted. By 1984, those changes were in place, but payroll tax increases enacted in 1983 and the Tax Reform Act of 1986 were yet to come. By 1988, most changes from the 1986 act will be in place.

Between 1977 and 1984, the distribution of total federal taxes became less progressive. This change primarily reflected a shift in the tax burden at both extremes of the income distribution. Effective tax rates (the ratio of taxes to family income) rose for the 10 percent of families at the lowest end of the distribution and fell for the 10 percent of families at the highest. Between 1984 and 1988, the distribution of taxes is expected to become more progressive but to remain less progressive than in 1977.

MEASURING FAMILY INCOMES AND FEDERAL TAX LIABILITIES

The results of this study necessarily depend on assumptions that are subject to challenge. There is no definitive way in which to assign combined federal taxes to particular family income groups. Neither is there a definitive way in which to measure family incomes. Both require methodological judgments and compromises that bear critically on the results obtained.

In this study, combined federal taxes include individual and corporate income taxes, social insurance payroll taxes, and excise taxes except for the windfall profit tax. The distribution of taxes is

classified as progressive if the ratio of taxes to incomes (the effective tax rate) rises as incomes rise, regressive if the ratio of taxes to incomes falls as incomes rise, or proportional if the ratio is the same at all income levels.

Although federal tax payments are made by individuals, corporations, and other employers, the economic burden of all taxes ultimately rests with families and individuals. Economists speak of the reduction in family income or purchasing power as the incidence of a tax. The incidence of some taxes, particularly the corporate income tax, has not been estimated conclusively, and remains a controversial issue. The following incidence assumptions are used in the study.

- The individual income tax burden is attributed to the families who directly pay the tax. The tax does not shift among families.

- The social insurance payroll tax burden is allocated to employee compensation.

- The corporate income tax burden is allocated in two different ways. In alternative one, the burden is allocated to capital income. This is the standard treatment if the supply of investment capital is fixed, as in an economy where the rate of savings is relatively fixed and domestic capital markets are isolated from international markets. In alternative two, the burden is allocated to employee compensation. This is an appropriate treatment if the supply of investment capital is highly responsive to taxes and other prices, as in a world economy with interdependent capital markets. Because capital income is a larger share of the total income of higher-income families than of moderate- and lower-income families, the corporate tax is more progressive with the first alternative than the second.

- The excise tax burden is allocated in proportion to expenditures on the taxed goods and services.

The study does not attempt to allocate the distributional effects of general government spending. In comparing the distribution of federal taxes in different years, shifts in the distribution of expenditures between those years are ignored. The study separates the distributional effects of taxes from the effects of expenditures

specifically related to those taxes. Social Security revenues are thus implicitly treated as independent of benefit payments.

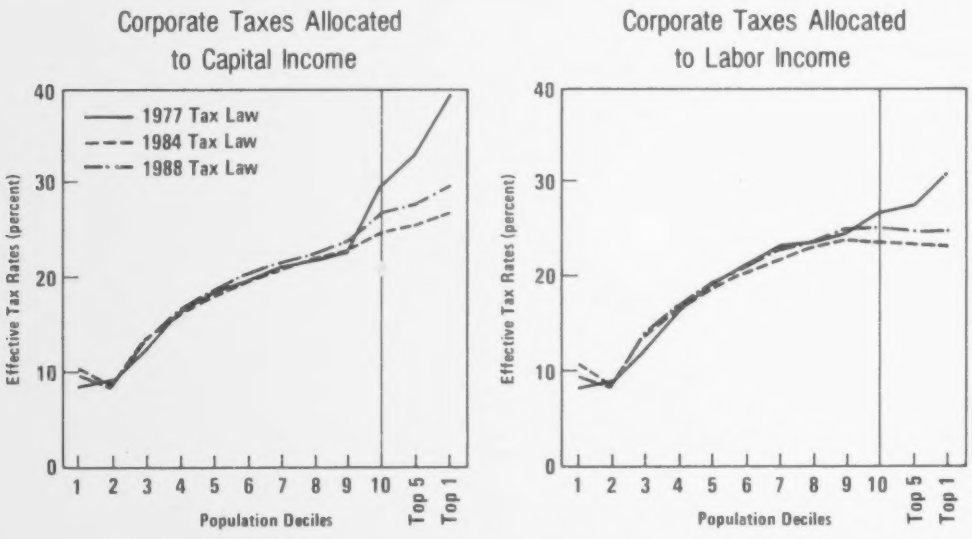
In the study, family income is measured on a cash receipts basis, a definition generally consistent with the measure of income used by the federal tax system. Family income equals the sum of wages, salaries, self-employment income, and personal rents, interest, and dividends, plus cash pension benefits and realized capital gains. Family income excludes accrued but unrealized capital gains, employer contributions to pension funds, in-kind government transfer payments, and other noncash income. Because income is measured before reductions for any federal taxes, contributions for federal social insurance and federal corporate profits taxes are added to family income.

CHANGES IN EFFECTIVE TAX RATES

Summary Figure 1 compares effective tax rates in 1977, 1984, and 1988. For most income deciles, the change in effective tax rates between 1977 and 1984 was relatively small. For families in the

Summary Figure 1.

Effective Federal Tax Rates by Population Decile (All taxes combined)



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

lowest decile, however, the total effective tax rate increased from 8 percent to 10.5 percent. The effective tax rate for families in the highest-income decile declined by just under five percentage points for the capital income allocation of the corporate tax and by three percentage points for the labor income allocation. For families in the top 1 percent of the income distribution, the total effective tax rate declined by about twelve percentage points when the corporate tax was allocated to capital income and by about eight percentage points when it was allocated to labor income.

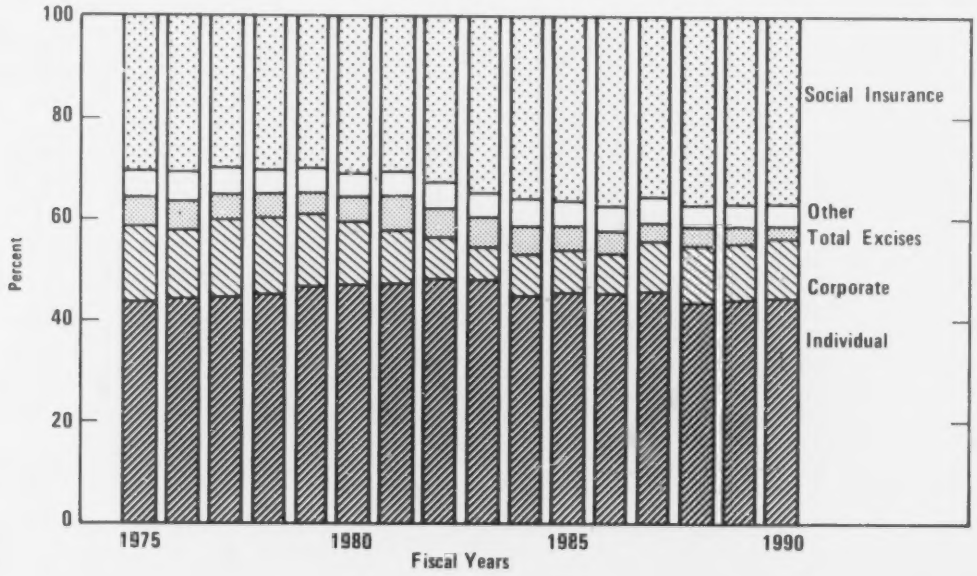
By 1988, the effective tax rate for families in the lowest- income decile will decline slightly from its 1984 level, but will remain about 1.5 percentage points higher than in 1977. Between 1984 and 1988, the rate for families in the highest-income decile will increase by 1.4 to 1.8 percentage points depending on the allocation of the corporate income tax, but will remain two to three percentage points lower than it was in 1977.

Changes in the Distribution of Revenues by Source

Part of the change in total effective tax rates reflects changes in the relative importance of different federal taxes. Summary Figure 2

Summary Figure 2.

Share of Total Federal Revenues by Source, 1975-1990



SOURCE: Congressional Budget Office tax computations.

shows the distribution of federal tax revenues by source. Since the mid-1970s, the distribution has shifted in the direction of personal and social insurance taxes and away from taxes on business. In 1975, 44 percent of federal tax revenues were attributable to the individual income tax, 30 percent to social insurance payroll taxes, 15 percent to the corporate income tax, 6 percent to combined federal excise taxes, and the remainder to miscellaneous receipts.

By 1984, the percentage of revenues attributable to the individual income tax was 45 percent, only slightly higher than in 1975. The individual income tax share reached a peak of 48 percent in 1982 and 1983. The share of revenues from social insurance taxes rose sharply between 1975 and 1984, reaching 36 percent in that year. The share of revenues from the corporate income tax had fallen to 8.5 percent by 1984.

Because the individual income tax is the most progressive federal tax, while social insurance payroll taxes are, in general, much less progressive and even regressive in the highest-income range, the increased importance of social insurance taxes contributed to the decrease in the progressivity of total federal taxes between 1977 and 1984.

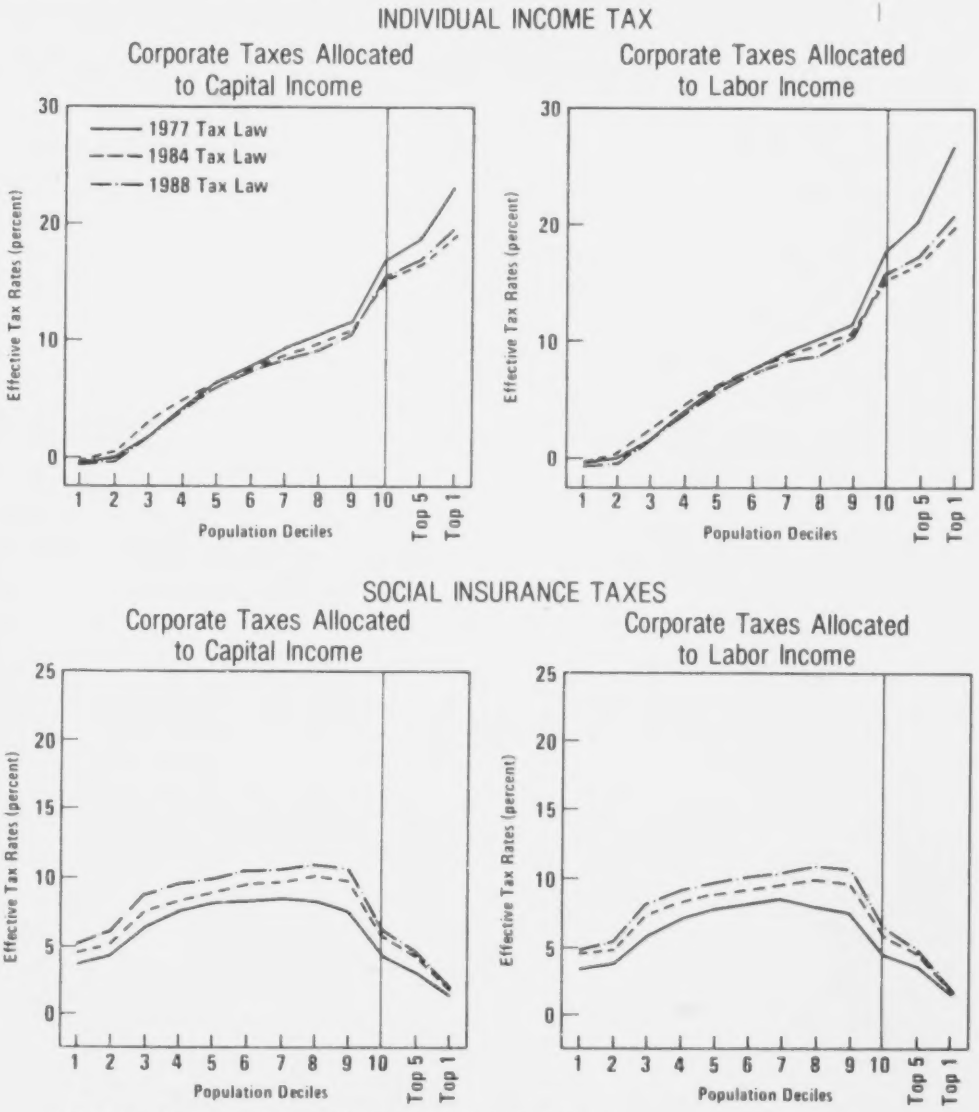
After falling slightly, the share of federal revenues from the individual income tax is projected to return to 45 percent of total federal revenues by 1990. The share of federal revenues from social insurance taxes is projected to rise slightly to 37 percent. The share from the corporate income tax is projected to rise to 12 percent.

Changes in Effective Tax Rates by Type of Tax

Another part of the change in total effective tax rates reflects changes in the effective tax rate for each of the different federal taxes. Summary Figure 3 shows the effective tax rate for individual income and social insurance taxes in 1977, 1984, and 1988. Because family income includes a family's share of the corporate income tax, these effective tax rates depend on the allocation of the corporate income tax. The differences are small enough, however, that for each tax the two distributions of effective tax rates look quite similar. Between 1977 and 1984, effective individual income tax rates rose for families in the bottom two-fifths of the income distribution and fell for families in the top two-fifths. The change in effective tax rates for the top

Summary Figure 3.

Effective Federal Tax Rates by Population Decile



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

decile was the most dramatic, falling by about two percentage points. Between 1984 and 1988 the effective tax rate will fall for all deciles except the highest. Every income group will have the same or lower effective individual income tax rate in 1988 than in 1977, with the largest reductions for the higher-income groups.

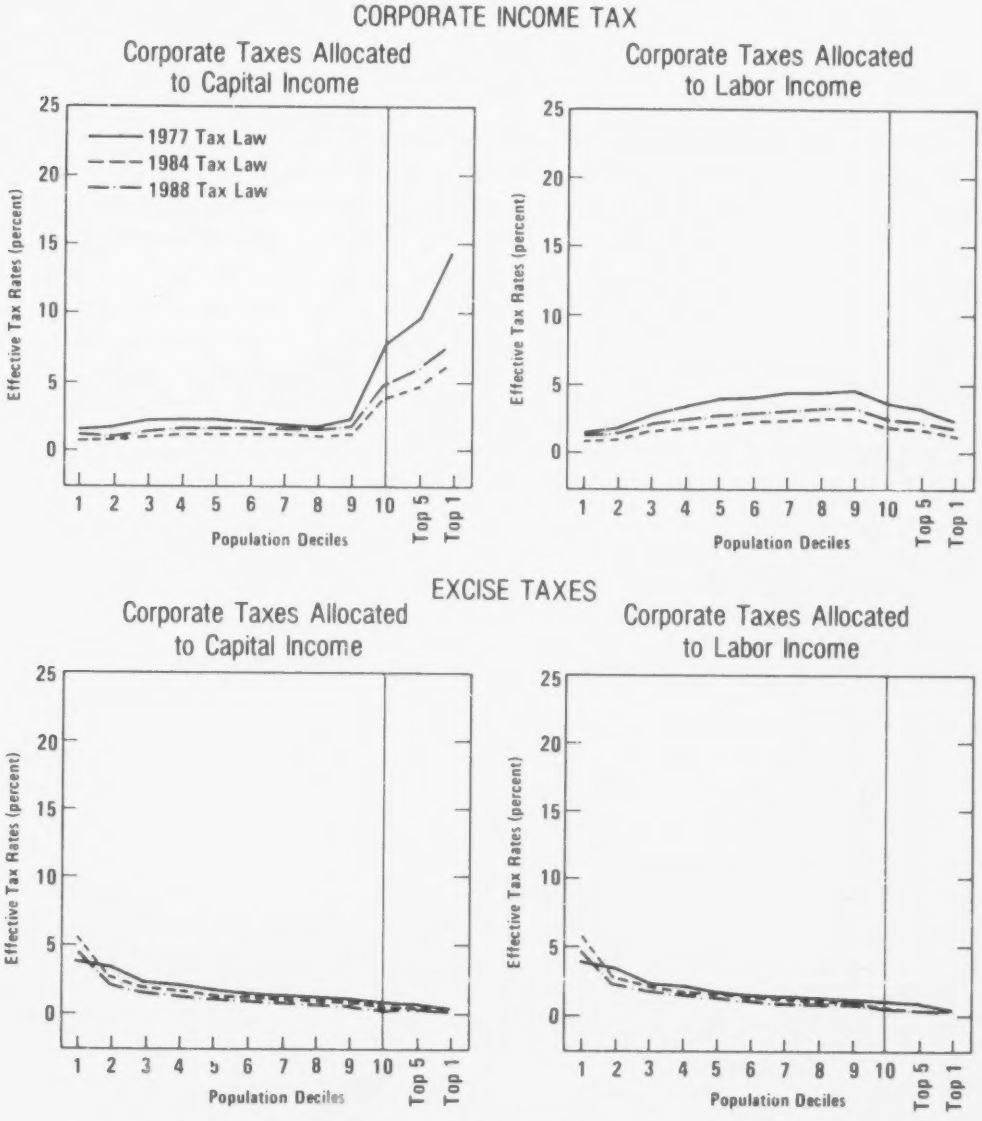
The effective social insurance tax rate will rise between 1977 and 1988 for every income group, reflecting the increase in the combined Social Security payroll tax rate from 11.70 percent to 15.02 percent. The effective social insurance tax rate increased faster between 1977 and 1984 for higher-income groups because the maximum amount of earnings subject to the tax rose nearly 40 percent faster than wages. By 1988, the effective social insurance rate will exceed the effective individual income tax rate for all but the highest decile.

The pattern of effective corporate income tax rates depends on the allocation of the corporate tax. Summary Figure 4 shows the distribution of effective corporate tax rates in 1977, 1984, and 1988 under both allocations of the tax. When the tax is allocated to capital incomes, the highest-income groups have much higher tax rates than the other income deciles. When the tax is allocated to labor income, the effective corporate tax rate is lower at the bottom and the top of the income distribution. This result occurs because with the allocation to labor incomes, the corporate tax is equivalent to a proportional tax on wages; and for families in the lowest- and highest-income groups, labor income is a smaller share of total income than for the average family. The level of effective corporate income tax rates is almost 50 percent lower in 1984 than in 1977, and is projected to be about 30 percent lower in 1988 than in 1977 (but higher than in 1984). The lower rate for 1984 reflects both a lower corporate profit share of GNP and a lower tax rate on corporate profits. The rate for 1988 reflects a continuation of a lower projected profit share, offset partially by legislation that raised effective rates on profits after 1984.

Summary Figure 4 also shows the effective excise tax rate. The effective excise tax rate declines with income in all three years. For all groups except the lowest, the effective excise tax rate is lower in 1984, and is projected to be lower in 1988, than it was in 1977. The increase in the gasoline excise tax and the drop in real income of the bottom decile are responsible for the increase in the effective tax rate for families in the lowest-income decile.

Summary Figure 4.

Effective Federal Tax Rates by Population Decile



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

In this analysis, family income is measured over a single year. Income measured on an annual basis tends to understate the true economic circumstances of many of the lowest-income families. While most taxes are also based on annual incomes and thus reflect a family's current income status, excise taxes depend on family expenditures. Expenditures probably are related more closely to an expected long-term level of income than to income in a single year. Families whose incomes may have fallen temporarily are likely to maintain their previous level of expenditures in the expectation that their incomes will return to more normal levels. Young families may spend a large fraction of their current incomes, even greater than 100 percent, because they expect their incomes to rise significantly over time. Measuring the distribution of excise taxes over family income measured in a single year will tend to overstate the burden of those taxes on permanently low-income families. To the extent that expenditures reflect permanent incomes, the regressivity of federal excise taxes measured against permanent income is less than the conventional measures presented in this study.

HOW TAX LAW CHANGES AFFECTED THE DISTRIBUTION OF FEDERAL TAXES

Changes in the distribution of tax liabilities over years are not the result solely of changes in the tax laws. The level and distribution of family income also change between years. The distribution of effective tax rates shifts between years for three reasons: changes in tax law change the relationship between income and taxes; changes in tax law cause families to alter their economic behavior, thereby changing the level and distribution of incomes; and incomes change for reasons independent of the tax law. Because it is difficult to distinguish accurately between changes in incomes caused by changes in the tax law and changes in incomes that occur for other reasons, the full effect of changes in the law on the distribution of tax liabilities is not readily measurable. By holding constant the level and distribution of income, however, it is possible to isolate the effect of changes in the law on the relationship between income and taxes.

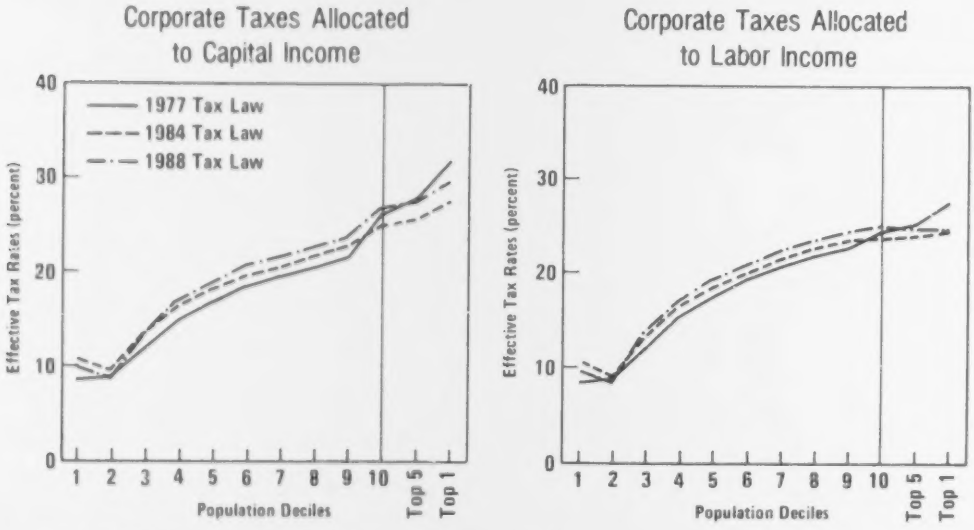
In the study, the distributions of federal tax liabilities under 1977, 1984, and 1988 tax laws are also compared holding incomes constant at their 1984 and 1988 levels. The constant-income distributions of federal taxes show generally the same results as the comparisons across years, but with less dramatic differences between 1977 and the

other years in the highest-income deciles. Summary Figure 5 compares total effective tax rates in 1988 under the 1988 tax law, and under the 1977 and 1984 tax laws adjusted to 1988 levels. The greater progressivity of the 1977 tax law is still apparent, but for the highest-income decile the differences between the 1977 law and the 1984 and 1988 laws are reduced. The results for the laws evaluated at 1984 incomes (not shown here) are quite similar.

For most deciles except the highest, total effective tax rates for the adjusted 1977 law in 1988 are lower than total effective tax rates for either the adjusted 1984 law or the 1988 law in 1988. The much more pronounced difference in effective tax rates over most of the income distribution in Summary Figure 5 as compared with Summary Figure 1 is attributable to the change in the corporate profit share of national income. Effective tax rates for individual income, Social Security payroll, and excise taxes are only slightly different for the same tax law evaluated at different income levels. But, for almost all deciles, effective corporate income tax rates for the 1977 law are much lower when the corporate profit share of gross national product is held constant at 1988 levels (as in Summary Figure 5) than with the 1977 profits share (as in Summary Figure 1).

Summary Figure 5.

Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes (All taxes combined)



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

CHAPTER I

INTRODUCTION

In the past decade, the Congress has enacted a series of significant changes in federal tax laws. These changes began with the Tax Reform Act of 1978 and included the Economic Recovery Tax Act of 1981, the Tax Equity and Fiscal Responsibility Act of 1982, the Social Security Amendments of 1977 and 1983, and the Tax Reform Act of 1986--the latter being the first complete revision of the Internal Revenue Code since 1954. Over the same period, the level and distribution of incomes have also changed. The combination of changes in tax laws and changes in income (including the interaction of the two) have changed the distribution of federal tax liabilities.

This paper compares changes in the distribution of separate and combined federal tax burdens by family income classes over the period from 1975 through 1990.1/ The federal taxes included are individual and corporate income taxes, social insurance payroll taxes, and excise taxes. These taxes account for about 95 percent of total federal tax revenues. The remainder of federal revenues come from estate and gift taxes, customs duties, and miscellaneous receipts. Revenues from these remaining sources are not included in the analysis because of the difficulty of attributing these liabilities to particular families.

Changes in the distribution of tax liabilities across income groups are measured primarily by changes in the ratio of taxes to incomes (effective tax rates). A particular tax is characterized as progressive if

---

1. Earlier studies of the distribution of tax burdens include: Joseph A. Pechman and Benjamin A. Okner, *Who Bears the Tax Burden?* (Washington, D.C.: The Brookings Institution, 1974); Richard A. Musgrave, Karl E. Case, and Herman Leonard, "The Distribution of Fiscal Burdens and Benefits," *Public Finance Quarterly*, vol. 2 (July 1974), pp. 259-311; Edgar K. Browning and William R. Johnson, *The Distribution of the Tax Burden* (Washington, D.C.: American Enterprise Institute, 1979); Morgan Reynolds and Eugene Smolensky, *Public Expenditures, Taxes and the Distribution of Income: The United States, 1950, 1961, 1970* (New York: Academic Press, 1977); and Joseph A. Pechman, *Who Paid the Taxes, 1966-85?* (Washington, D.C.: The Brookings Institution, 1985).

the ratio of taxes to incomes rises as income rises, regressive if the ratio of taxes to incomes falls as income rises, or proportional if the ratio is the same at all income levels.

The results of this analysis necessarily rely on assumptions that are subject to challenge. There is no definitive way in which to assign the burden of federal corporate income taxes, excise taxes, and the employer portion of payroll taxes to particular family income groups. Neither is there a definitive way to measure family incomes. Both require methodological judgments and compromises that bear critically upon the results obtained. While these judgments are made explicit, and alternative assumptions are used in allocating corporate income taxes, these are not the only possible approaches.

TOPICS NOT COVERED

This paper analyzes only changes in the relationship of tax liabilities to family incomes by family income classes. It does not consider changes in horizontal equity (that is, the treatment of families with equal incomes). Nor does it consider the effects on incentives of changes in the tax system and the resulting changes in the level and distribution of incomes. The results should therefore not be treated as a complete assessment of the effects of recent and continuing changes in federal tax laws.

Finally, the distributional effects of government expenditures are not taken into account. Certain federal expenditures, such as those for national defense, general government administration, and discretionary economic subsidies and social programs, cannot be allocated to particular families; yet they do not benefit all families equally. Some taxes are earmarked for special purposes. Certain excise taxes, such as the motor fuels tax on gasoline or the air passenger ticket tax, are dedicated to special trust funds. Monies from these funds are used for directly related expenditures such as highway and airport construction and maintenance. Social Security payroll taxes also are dedicated to special trust funds from which retirement, disability, and health insurance benefits are paid. Indeed, some analysts argue that

a portion of Social Security contributions should properly not be treated as taxes but rather as government-sponsored savings.2/

The study does not attempt to allocate the distributional effects of either general government spending or spending from specially dedicated trust funds to particular family income classes. Thus, in comparing the distribution of taxes by family income classes across years, it ignores the possibility that the distribution of government expenditures may also have shifted between those years. In this context, Social Security is treated as a separable tax/transfer system with no direct link between current payroll taxes and future retirement benefits.

2. For a discussion of this issue, see Edgar K. Browning, "The Marginal Social Security Tax on Labor," *Public Finance Quarterly*, vol. 13, no. 3 (July 1985), pp. 227-252; and Richard V. Burkhauser and John A. Turner, "Is the Social Security Payroll Tax a Tax?" *Public Finance Quarterly*, vol. 13, no. 3 (July 1985), pp. 253-268.

CHAPTER II

OVERVIEW OF FEDERAL REVENUES AND FEDERAL TAX LEGISLATION, 1975-1990

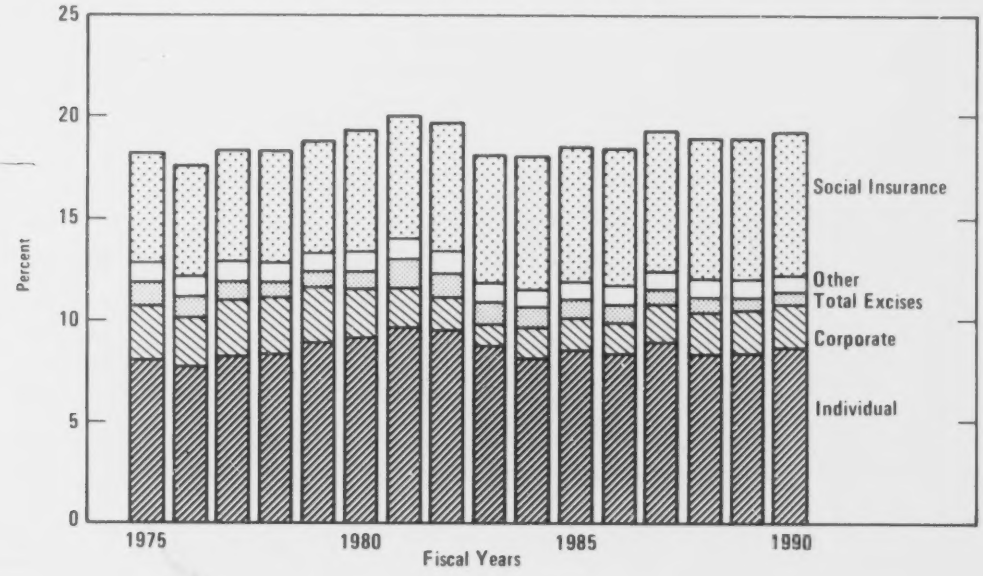
Numerous changes occurred in federal tax laws between 1975 and 1986. These changes, combined with changes in prices and in the level and composition of income, caused fluctuations in the level and composition of federal revenues. This chapter begins with a discussion of the composition of federal revenues and then examines each major source of revenue in turn.

THE LEVEL AND COMPOSITION OF FEDERAL REVENUES

Since the mid-1970s, the distribution of federal tax receipts by tax source has been marked by a shift in the direction of personal taxes and away from taxes on business. Over the 1975 to 1983 period, the individual income tax and social insurance taxes grew in relative importance as sources of federal revenues while the corporate income tax and federal excise taxes declined. Since 1983, the trend in individual and corporate income taxes has been partially reversed, but neither tax has returned to its 1975 share of total revenues. The relative importance of social insurance taxes has continued to grow. If there are no further changes in tax legislation, projections indicate that the relative importance of the individual income tax and social insurance taxes will stabilize at about their current levels. The importance of the corporate income tax will grow but will not return to its 1975 level by 1990, while the importance of excise taxes will decline.

The changing distribution of revenues by tax source reflects both changes in tax law and the effect of changing economic conditions. Figure 1 shows federal revenues from each tax source as a percent of gross national product (GNP). Revenues as a share of GNP rose from 17.6 percent in 1976 to a peak of 20.1 percent in 1981. Because of tax cutting legislation passed in 1981 and the recession that began in the fourth quarter of that year, the percentage dropped to 18.1 in 1983. Subsequent legislation and growth in real incomes will raise the per-

Figure 1.
Revenues by Source as Shares of GNP, 1975-1990



SOURCE: Congressional Budget Office tax computations.

centage to 19.3 in 1987. Revenues as a share of GNP are expected to remain at approximately that level through the remainder of the current decade.

Individual income tax revenues, which account for nearly half of total revenues, move in much the same pattern as total revenues. Individual income tax revenues as a share of GNP grew somewhat faster than the total revenue share of GNP from 1975 to 1981 and are forecast to fall slightly between 1987 and 1990. Corporate income tax revenues as a share of GNP dropped sharply from 1977 to 1983 but are expected to be twice as high in 1990 as in 1983, although still below their 1975 share. Social insurance revenues as a share of GNP will grow from 5.3 percent in 1976 to 7.0 percent in 1990.

THE INDIVIDUAL INCOME TAX

Individual income tax revenues as a share of GNP grew from 8 percent in 1975 to 9.6 in 1981. Much of this growth was the result of inflation-induced increases in individual income tax burdens. These

increases were not offset until the enactment of the Economic Recovery Tax Act of 1981 (ERTA), which cut tax rates by 23 percent over a three-year period. ERTA also provided that tax brackets would be indexed for inflation beginning in 1985. As a result, individual income tax revenues remained at a relatively constant percent of GNP in 1985 and 1986, growing only as real incomes increased. Tax reductions enacted in the Tax Reform Act of 1986 are projected to lower individual income tax revenues as a share of GNP in 1988 below what they would have been under previous law. The ratio of individual income taxes to GNP will rise slightly through the remainder of the decade as real incomes continue to grow and some of the revenue-raising provisions of the 1986 Tax Act are phased in.

Changes in the individual income tax have affected not only the level of individual income taxes but also the distribution of taxes among families. Tax legislation can affect the distribution of the individual income tax in three primary areas-allowing or disallowing certain deductions from income, setting the level at which income becomes taxable, and specifying the tax rate schedule. Legislated changes in individual income tax laws from 1975 to 1985 served to narrow the tax base in ways particularly favorable to higher-income families. Changes *not* made in this inflationary period raised taxes for low-income families by allowing the income level at which families are subject to individual income taxes to fall relative to family incomes. The Tax Reform Act of 1986 will undo the changes in the tax base and will restore the tax-exempt level of income to inflation-adjusted 1975 levels.

Changes in the Tax Base

Until the Tax Reform Act of 1986, the major changes in the individual income tax base over the period involved the treatment of retirement income, special deductions for married couples in which both spouses work, and the treatment of capital gains. Legislation enacted in 1974, 1978, and 1981 served to narrow the tax base. The Pension Reform Act of 1974 allowed workers not covered by a private pension plan to contribute to tax-deferred individual retirement accounts (IRAs). The Economic Recovery Tax Act of 1981 (ERTA) substantially liberalized the deduction for IRAs by allowing all workers to set up an IRA and increasing the maximum amount of allowable contributions. ERTA also established a new deduction for married couples in which both spouses worked, allowing a 10 percent deduction, up to a maximum of

$3,000, against the earnings of the lower-earning spouse. The treatment of capital gains was liberalized by the 1978 Revenue Act, which increased the exclusion for long-term capital gains from 50 percent to 60 percent. The benefits of these particular deductions accrued disproportionately to higher income families.1/

All of these provisions were reversed by the Tax Reform Act of 1986, which eliminated the two-earner deduction, the IRA deduction for high-income taxpayers who are covered by private pensions, and the partial exclusion of long-term capital gains. The 1986 act also substantially restricted itemized deductions and limited the ability of taxpayers to offset their income with partnership and rental losses.

Changes in the Tax Threshold

A major factor in determining the tax burden on lower-income families is the income tax threshold--the level at which income becomes subject to tax. The level of tax-exempt income depends on the personal exemption amount, the number of exemptions, the standard deduction (or zero bracket amount), and certain personal tax credits. Table 1 shows how these elements of the tax code have changed and are expected to change. The Tax Reduction Act of 1975, which introduced the general tax credit and an earned income credit for low-income recipients, eliminated or lessened the tax burden for many low-income families. The Tax Reduction and Simplification Act of 1977 raised the low-income allowance and converted it into a zero bracket amount. The Revenue Act of 1978 eliminated the general tax credit but increased the personal exemption and the earned income credit, effective in 1979.

After 1979, no further increases were made in either the personal exemption amount or the standard deduction until 1985. This allowed the real value of exemptions and deductions to erode as prices rose. The earned income credit was not changed until the Deficit Reduction

1. A 1986 Congressional Budget Office study, "The Effects of the 1981 Tax Act on the Distribution of Income and Taxes Paid," found that taxpayers in the top 25 percent of the income distribution (except for those in the top 1 percent) generally received a 7 percent to 8 percent reduction in tax liabilities from changes in the tax base, while the remaining 75 percent of taxpayers received a 2 percent to 3 percent reduction (p. 34).

Act of 1984 raised the maximum amount of the credit from $500 to $550 beginning in 1985.

The effect of these changes is illustrated in Figure 2. The figure shows the ratio of the income tax threshold to the poverty threshold for two types of families: a married couple with two children and a single head of household with two children. The poverty threshold is the Census Bureau's official measure of poverty-level income. The threshold varies by family size and is indexed to increases in consumer prices.

With no changes in the nominal tax-exempt level of income between 1979 and 1985, inflationary growth in family incomes caused the real value of the tax-exempt level of income to decline. In 1979, the tax-exempt level of income for a married couple with two children was equal to approximately 120 percent of the poverty threshold for a family of four. By 1984, the tax exempt level of income had fallen to

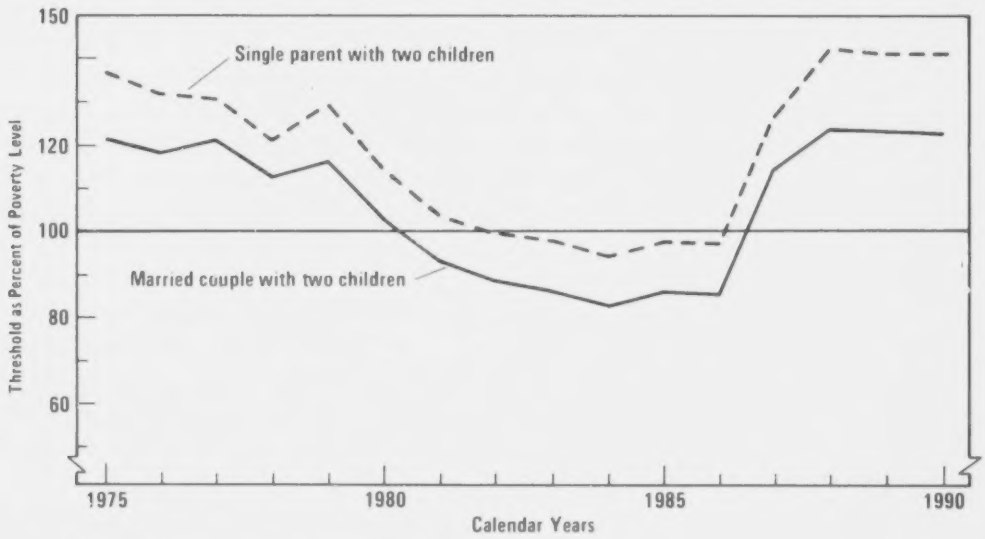
TABLE 1. EXEMPTIONS, STANDARD DEDUCTIONS, AND CREDITS FOR THE INDIVIDUAL INCOME TAX, 1975-1990
(By calendar year)

Year	Personal Exemption	Standard Deduction for Married Couples a/	Tax Credit per Exemption	Maximum Amount of Earned Income Credit
1975	750	1,900	30	400
1976	750	2,100	35	400
1977	750	3,200	35	400
1978	750	3,200	35	400
1979	1,000	3,400	0	500
1980	1,000	3,400	0	500
1981	1,000	3,400	0	500
1982	1,000	3,400	0	500
1983	1,000	3,400	0	500
1984	1,000	3,400	0	500
1985	1,040	3,540	0	550
1986	1,080	3,670	0	550
1987	1,900	3,760	0	850
1988	1,950	5,000	0	875
1989	2,000	5,250	0	920
1990	2,050	5,500	0	966

SOURCE: Internal Revenue Code and Congressional Budget Office projections.

a. Low-income allowance in 1975 and 1976; zero bracket amount in 1977 through 1986.

Figure 2.
Ratio of Income Tax Threshold to Poverty Level, 1975-1990



SOURCE: Congressional Budget Office tax computations.

NOTE: All income is assumed to be earnings. For the married couple, one spouse is assumed to have all of the earnings.

about 80 percent of the poverty threshold for the same type of family. The Economic Recovery Tax Act of 1981 provided for indexation of personal exemptions and the zero bracket amount (ZBA). However, because indexing did not take place until 1985, the real value of personal exemptions and the ZBA continued to decline until 1985. ERTA did not provide for indexing of the earned income credit.

The Tax Reform Act of 1986 raised the zero bracket amount, which was converted back into a standard deduction, and increased the personal exemption and the earned income credit. The 1986 act also provided for indexing of the earned income credit. Figure 2 shows that these changes are projected to raise the tax-exempt level of income to over 120 percent of the poverty threshold for a married couple with two children by 1988. Indexing of personal exemptions, the standard deduction, and the earned income credit will keep the tax-exempt level of income at the same position relative to the poverty line thereafter.

Changes in Tax Rates

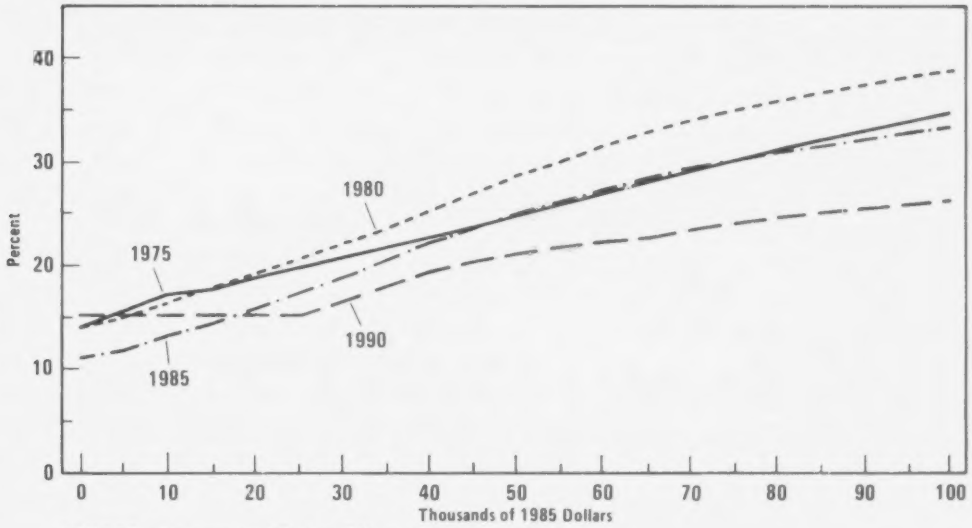
There also have been major changes in the individual income tax rate structure. The rate structure determines the tax liability for a given level of taxable income. In the Economic Recovery Tax Act of 1981, the Congress lowered the top marginal tax rate on individual income from 70 percent to 50 percent, and reduced other marginal tax rates by 23 percent over a three-year period. ERTA also provided for indexing the width of the tax brackets beginning in 1985.

The Tax Reform Act of 1986 replaced the previous multibracketed formula with a transitional five-bracket formula in 1987 and a two-bracket formula for all subsequent years. The 1986 act also lowered the maximum tax rate on individual income taxes to 28 percent. However, the law also contained a recapture provision for the benefits of lower rates on income in the bottom bracket, which will result in marginal tax rates of 33 percent over certain high-income ranges.

Figure 3 shows the ratio of computed taxes to taxable income at different levels of taxable income for a married couple with two children in selected years. Taxable income is in 1985 dollars in all years. Taxable income in Figure 3 refers to the tax concept of income after all adjustments, exemptions, and deductions.2/ Figure 3 illustrates the steepness of the individual income tax rate structure but does not by itself completely indicate the progressivity of the tax system in different years because the rules for computing taxable income changed substantially between years. The figure shows that families at most levels of real taxable income would have paid higher taxes in 1980 than in 1975. Except at the lowest levels of income, inflation between 1975 and 1980 more than offset a widening of the tax brackets in 1979, narrowing tax brackets in real terms and causing tax rates to rise faster with taxable income. The ERTA reduction in tax rates produced a downward shift in the tax schedule

2. To make taxable income comparable across years, taxable income in 1975 reflects the effect of the general tax credit on the income tax threshold. Also, 1980 and 1985 taxable incomes were reduced by the amount of the ZBA.

Figure 3.
Individual Income Tax as a Percent of Taxable Income
(For a married couple with two children)



SOURCE: Congressional Budget Office tax computations.

NOTE: Taxable income in 1975 reflects the general tax credit. Taxable income in 1980 and 1985 excludes the zero bracket amount.

between 1980 and 1985.3/ By 1990, the changes from the Tax Reform Act of 1986 will have reduced the steepness of the schedule.

SOCIAL INSURANCE TAXES

The continuing increase in social insurance taxes as a percentage of GNP reflects increases in Social Security payroll taxes enacted in the Social Security Amendments of 1973, 1977, and 1983. Social Security payroll taxes account for between 84 percent and 93 percent of all social insurance revenue collected over this period. Table 2 shows

3. Although ERTA reduced all but the highest marginal tax rate by the same percentage between 1981 and 1984, the figure shows reductions of about 20 percent for taxable incomes between $0 and $20,000 and from 13 percent to 14 percent for incomes of $30,000 and higher. Because ERTA did not change bracket widths until 1985, inflation narrowed the tax brackets, causing the same level of real income to be taxed in a higher income bracket in 1985 than in 1980.

TABLE 2. SOCIAL SECURITY CONTRIBUTION RATES AND MAXIMUM TAXABLE EARNINGS, 1975-1990
(By calendar year)

Year	Contribution Rate for Employer and Employee (Each) (In percent)	Annual Maximum Taxable Earnings (In nominal dollars)	Annual Maximum Taxable Earnings (In 1987 dollars)
1975	5.85	14,100	29,836
1976	5.85	15,300	30,609
1977	5.85	16,500	31,009
1978	6.05	17,700	30,898
1979	6.13	22,900	35,930
1980	6.13	25,900	35,796
1981	6.65	29,700	37,190
1982	6.70	32,400	38,228
1983	6.70	35,700	40,809
1984	7.00 a/	37,800	41,445
1985	7.05	39,600	41,923
1986	7.15	42,000	43,624
1987	7.15	43,800	43,800
1988	7.51	45,000	42,792
1989	7.51	46,800	42,479
1990	7.65	49,500	43,018

SOURCE: *Social Security Bulletin, Annual Statistical Supplement, 1986*, and Congressional Budget Office projections.

a. Employee contributions were partially offset by a 0.3 percent refundable tax credit.

Social Security payroll tax rates and the maximum amount of earnings subject to the tax in 1975 through 1990. Both the tax rate and the maximum amount of earnings subject to tax have risen since 1975. From 1975 to 1987, the Social Security payroll tax rates for employees and employers each increased from 5.85 to 7.15 percent. The two tax rates are scheduled to rise to 7.65 percent by 1990. Over the 1975 to 1987 period, the maximum taxable earnings level in 1987 dollars rose from $29,836 to $43,800--a 47 percent real increase. Since 1975, the maximum amount of earnings subject to the tax has been indexed to the growth in average wages. In 1979 through 1981, however, additional "ad hoc" increases occurred. Because of these ad hoc increases, the maximum grew nearly 40 percent faster than average wages between 1975 and 1987. Because prices will increase by more than the factor used to index the maximum, the maximum is projected to fall in real terms between 1987 and 1990.

THE CORPORATE INCOME TAX

Corporate tax revenues as a share of GNP fell from 2.8 percent in 1977 to 1.1 percent in 1983. As Table 3 shows, the decrease reflects both a decline in corporate profits as a percent of GNP and the enactment of legislation in 1978 and 1981 that reduced the effective corporate tax rate. The Revenue Act of 1978 reduced the corporate tax rate on long-term gains and the maximum statutory rate on corporate income. Major changes in the corporate income tax also were contained in ERTA, which significantly liberalized depreciation allowances for tax purposes by shortening the depreciable lives of assets and allowing accelerated depreciation methods, liberalized the investment tax credit, and provided for "safe-harbor leasing."4/ These legislative changes were partially offset in the Tax Equity and Fiscal Responsibility Act of 1982 and the Deficit Reduction Act of 1984.

The Tax Reform Act of 1986 is anticipated to increase corporate income tax revenues as a percentage of GNP. Although the 1986 act reduced corporate tax rates, a net revenue increase will result from repeal of the investment tax credit, the new alternative minimum tax on corporations, a higher tax on corporate capital gains, reduced depreciation allowances, and a number of accounting changes.5/

EXCISE TAXES

Federal excise tax revenues from most sources have decreased as a percentage of GNP since 1975. This is the result of an inflation-induced decline in effective rates for some taxes and legislated reductions in others. Many federal excise tax rates are levied on a per unit or specific basis (for example, cents per gallon or per number of ciga-

4. Safe-harbor leasing allowed a firm with net operating losses to execute a sale and leaseback of new equipment with a firm that had a positive tax liability. This transaction enabled firms with net operating losses to receive the benefits of accelerated depreciation and the investment tax credit through reduced rental payments.

5. The accounting provision that is expected to produce the most revenue establishes uniform rules for the capitalization of inventory, construction, and development costs. Other major provisions accelerate the taxation of income from installment sales and long-term contracts, and disallow deductions for reserves for bad debts.

TABLE 3. CORPORATE INCOME AND TAXES, 1975-1990
(By calendar year)

Year	Economic Profits as a Percent of GNP a/	Corporate Federal Income Tax Liabilities as a Percent of Economic Profits
1975	7.4	32.5
1976	8.1	33.5
1977	8.8	31.9
1978	8.8	32.7
1979	8.0	32.5
1980	6.5	33.1
1981	6.2	27.5
1982	4.7	22.5
1983	6.3	22.0
1984	7.1	22.2
1985	6.9	21.0
1986	6.7	23.2
1987	6.6	30.1
1988	6.6	31.0
1989	6.7	32.3
1990	6.7	34.5

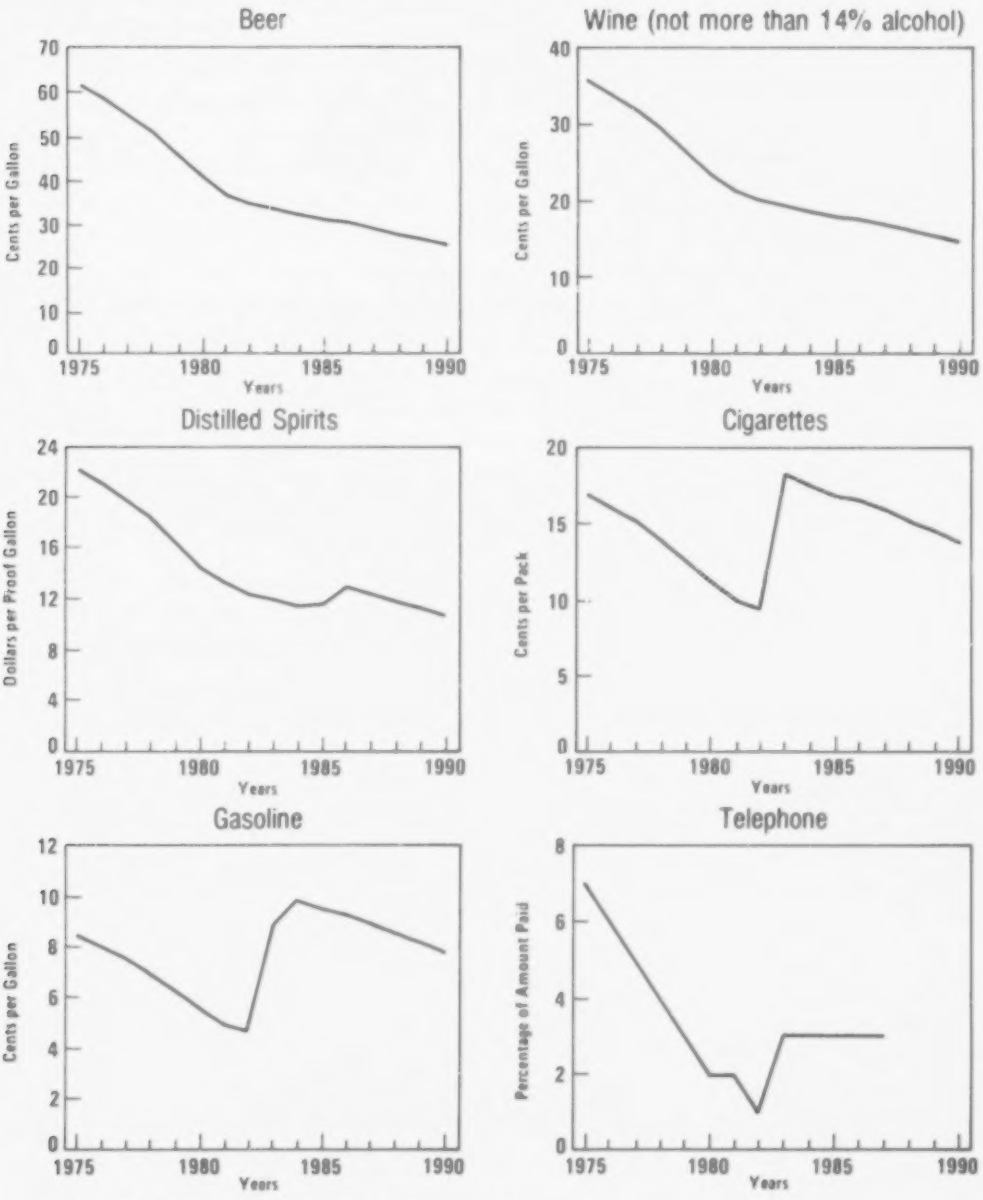
SOURCE: National Income and Product Accounts for 1975 through 1986 and Congressional Budget Office projections for 1987 through 1990.

a. NIPA book profits with the capital consumption and inventory valuation adjustment.

rettes). As prices rise, tax revenues fall as a percentage of expenditures on those items. Until some of these tax rates were increased in 1982 and 1983, most specific tax rates had been unchanged for 30 years. In 1986, the tax rates on beer and wine were at about half their real 1975 levels. Figure 4 shows excise tax rates in constant dollars for these and four other commodities. The tax rate on distilled spirits, which was raised in 1982, decreased by about 40 percent in real terms from 1975 to 1986. Increases in tax rates on both cigarettes and gasoline in 1983 kept those rates in real terms at about the same level or slightly higher in 1986 as they had been in 1975. Because none of these rates is scheduled for future increases, they are expected to decline further in real terms by 1990.

Other excise taxes are levied on an ad valorem basis (that is, as a percentage of expenditures). These taxes maintain their relative importance even as prices rise. However, statutory changes have reduced the relative revenues from some of these taxes. The major ad valorem federal excise tax is the tax on telephone communications,

Figure 4.
Federal Excise Tax Rates, 1975-1990 (In 1987 dollars)



SOURCE: Congressional Budget Office tax computations.

which decreased by one percentage point per year from a rate of 10 percent in 1972 to 2 percent by 1980, falling further to 1 percent for 1982. In 1982, the tax was extended and raised to its current level of 3 percent. It is scheduled to end on December 31, 1987.

The primary offsetting factor that temporarily boosted excise tax revenues as a percentage of GNP came in 1980 with the enactment of the windfall profit tax on the production and sale of domestic crude oil. Windfall profit tax revenues peaked at $23.3 billion in 1981. Without revenues from this source, federal excise tax revenues as a share of GNP would have declined even further between 1975 and 1985. The decline in oil prices will cause revenues from the tax to be less than $300 million per year after 1986.

CHAPTER III

WHO PAYS THE TAXES?

Although tax payments are made by corporations and other employers as well as by individuals, the economic burden of all taxes ultimately rests on the population. While it is obvious to most taxpayers that their spendable income is reduced by the taxes they pay directly, many have difficulty in seeing that their income and purchasing power are also reduced by the corporate income tax, the employer share of Social Security payroll taxes, and federal excise taxes. Corporations may send checks to the Internal Revenue Service in payment of the corporate income tax, as do all employers for their share of the payroll tax, and manufacturers or retailers for federal excise taxes; yet these business entities do not pay the tax in an economic sense. Rather, their taxes are passed on to families either through reduced returns to shareholders, lower wages to employees, or higher prices to consumers.

The allocation of business taxes to particular families is a critical problem in determining the overall federal tax burden of families. Families would share the tax burden of business taxes equally if they received their incomes in the same proportions from the same sources and spent their incomes on the same combination of goods--that is, they would have the same proportional decline in income or purchasing power. But families differ in how they receive and spend their incomes.

TAX INCIDENCE

Economists speak of the reduction in family income or purchasing power from paying a tax as the incidence of that tax. Taxes affect the amount of income received by the family (sources of income) and the prices of goods and services purchased by the family (uses of income). Because the effects of most major federal taxes on the relative prices of different goods and services are either small or difficult to estimate, the discussion of tax incidence that follows concerns mainly the effects

on sources of income. Only the treatment of federal excise taxes includes the effects on uses of income.

Individual Income and Payroll Taxes

The economic burdens of the individual income tax and of the employee share of Social Security payroll taxes are fairly easy to determine. Most economists agree that families who pay these taxes suffer the full loss in income. Both taxes can be shifted, however, if they reduce the total supply of labor or of savings.1/ Businesses then would be forced to offer higher wages or higher returns to investors in order to bring forth more workers or more savings for investment. Some of the economic loss from the taxes would be shifted temporarily to these businesses, which in turn would be forced either to accept the loss in the form of lower profits or to pass it on to consumers by raising prices.2/

The burden of the employer's share of Social Security payroll taxes, while less direct, most probably also falls to workers, given the same assumptions about the supply of labor and savings.3/ Indeed, the long-run economic burden of the employer share of the payroll tax should be no different than the long-run impact of the employee share.

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1. Some estimates suggest that savings and labor supply respond to changes in taxes. See Jerry Hausman, "Labor Supply," in Henry J. Aaron and Joseph A. Pechman, eds., *How Taxes Affect Economic Behavior* (Washington, D.C.: Brookings Institution, 1981); and Michael J. Boskin, "Taxation, Saving and the Rate of Interest," *Journal of Political Economy*, vol. 86 (April 1978). For a critique of the latter study, see E. Philip Howrey and Saul H. Hymans, "The Measurement and Determination of Loanable-Funds Saving," *Brookings Papers on Economic Activity*, no. 3 (1978), pp. 655-705.

2. Even with a fixed supply of labor and savings, individual income taxes on capital income can be shifted among families because certain types of investment are afforded preferential tax treatment. For example, income from state and local bonds is exempt from federal income taxes, while interest paid on borrowing to purchase housing can be deducted from income. Some families, particularly those in high-income tax brackets, will invest more heavily in tax-preferred assets, reducing the before-tax return on those assets but raising the before-tax return on assets that are fully taxed. This behavior shifts some of the burden of individual income taxes on capital income to owners of tax-preferred assets. See Harvey Galper and Eric Toder, "Transfer Elements in the Taxation of Income from Capital," in Marilyn Moon, ed., *Economic Transfers in the United States*, Bureau of Economic Research, Studies in Income and Wealth, vol. 49 (Chicago: The University of Chicago Press, 1984).

3. For a discussion of the incidence of the Social Security payroll tax, see John A. Brittain, *The Payroll Tax For Social Security* (Washington, D.C.: The Brookings Institution, 1972), pp. 21-59.

The distinction between the two is artificial because the payroll tax is a tax on labor regardless of whether it is paid by the buyer or the seller. In the short term, however, the distinction can be real because nominal wages are not likely to adjust immediately to changes in tax rates. Increases in the employee share of Social Security payroll taxes will initially reduce labor income if nominal wages do not rise to cover the new tax, while, for the same reason, increases in the employer share will initially reduce employer profits or cause consumer prices to rise.

The full amount of the payroll tax is the difference between what employers are willing to pay for workers and what employees actually receive. If the supply of labor is unaffected by the tax, employers will not change the total amount of compensation they are willing to pay. Thus, the full amount of the Social Security payroll tax represents a reduction in labor income.

A long-run reduction in labor income can come about either through a reduction in nominal wages or an increase in consumer prices with no change in nominal wages. In either case, real labor income is reduced. Whether the reduction occurs because of wage cuts or price increases depends on macroeconomic policies that determine the overall price level. If prices rise, the economic burden of the payroll tax may fall on other income as well.4/

On balance, the body of empirical evidence supports the position that employers are able to shift the economic burden of the Social Security payroll tax. It does not clearly establish whether the tax reduces nominal wages or increases prices.5/

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4. Under certain restrictive assumptions, the incidence of a tax shifted to consumption is equivalent to the incidence of a tax on wages, over the lifetime of the consumer/worker. For a discussion of this issue, see Anthony B. Atkinson and Joseph E. Stiglitz, *Lectures on Public Economics* (New York: McGraw-Hill Book Company, 1980), pp. 70-72; Mervyn A. King, "Savings and Taxation," *National Bureau of Economic Research*, Working Paper #428 (January 1980); and Joseph E. Stiglitz, *Economics of the Public Sector* (New York: W.W. Norton & Company, 1986), pp. 362-363.

5. Research on the incidence of payroll taxes is extensive and still growing. Supporting the conclusion of complete shifting of the employer portion of the payroll tax are earlier results from John Brittain (1972) and Wayne Vroman, "Employer Payroll Tax Incidence: Empirical Tests With Cross-Country Data,"

The Corporate Income Tax

There is considerably less agreement regarding the corporate income tax. Although it is levied on corporations, most economists believe that only in the short run does the full tax burden fall solely on the owners of corporate capital. In the longer term, it reduces the return to all capital investment. The tax initially lowers the return to investment in the corporate sector, but because investors seek to maximize their returns, invesment shifts out of the corporate sector and into the noncorporate sector until the rates of return on investment in the two sectors are equalized. Allowing for sufficient time and mobility of capital, the burden of the tax will eventually fall on all capital income.6/

Only under the assumption that the supply of savings is fixed will the burden of the corporate income tax fall exclusively on capital income. If savings decline in the face of a corporate tax, some of the

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5. (Continued)

Public Finance, vol. 2 (1974), pp. 241-270, and more recent research by Wayne Vroman, "An Interindustry Analysis of Employer Payroll Tax Incidence," Report to the U.S. Department of Health and Human Services (Washington, D.C., June 1986). As Vroman (1986) reports, different time series studies of payroll tax rates and money wages have found that the tax is shifted fully to money wages, that there is no shifting of the tax to wages, and that the tax is shifted only partially to wages. These studies are summarized in a paper by Richard F. Dye, "Evidence on the Effects of Payroll Tax Changes on Wage Growth and Price Inflation: A Review and Reconciliation," Office of Research and Statistics Working Paper No. 34, Social Security Administration (Washington, D.C., April 1984). Vroman (1986) also cites payroll tax incidence studies using other types of data. The results from these studies are equally diverse.

6. Strictly speaking, this result depends on certain assumptions concerning the price elasticity of demand for corporate output, the degree of substitutability between capital and labor in the corporate and noncorporate sectors, and the relative capital intensities of the two sectors. Under alternative assumptions, owners of capital may bear slightly more or less than 100 percent of the tax, and some of the burden may fall on workers or consumers. A number of studies have demonstrated that the result of full shifting to capital incomes holds under a wide range of conditions. See Arnold C. Harberger, "The Incidence of the Corporate Income Tax," *Journal of Political Economy*, vol. 70 (June 1962); Arnold C. Harberger, *Taxation and Welfare* (Chicago: University of Chicago Press, 1974); John B. Shoven, "The Incidence and Efficiency Effect of Taxes on Income From Capital," *Journal of Political Economy*, vol. 84 (December 1976); and the summary of those and other studies in J. Gregory Ballentine, *Equity, Efficiency, and the U.S. Corporation Income Tax* (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1980), pp. 32-50.

burden may fall on workers through lower wages.7/ This occurs because as savings decline there is less new investment. The stock of capital grows more slowly and productivity declines because workers must use older, fewer, and less technologically advanced tools and machines. Because wages are linked to productivity, labor income bears some of the corporate tax burden.

Even if there is no decline in savings, workers may bear some of the burden of the corporate income tax if the tax leads to a reduction in domestic investment. Because capital is thought to be mobile internationally, high corporate taxes could cause investors to take their money overseas (or, alternatively, discourage foreign investment in this country).8/ But workers would not bear the full burden unless international capital markets were free and open and there were no offsetting changes in taxes on investment in foreign countries.

Excise Taxes

Selective excise taxes are thought to be passed on to consumers, at least initially, through higher prices for the taxed items. If these price increases translate into a higher general price level, real incomes fall and the tax is eventually shifted to family incomes. If government policies prevent prices from rising, the reduced demand for taxed items will reduce wages and returns to shareholders in the industries

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6. (Continued)

   This result does not take account of the method by which new corporate investment is financed. If new investment is financed by debt rather than equity, the burden of the tax may not be shifted to all capital income but instead fall only on corporate shareholders. This follows from the deductibility of interest payments under both the corporate and the individual income tax. Because interest is deductible, the return to investment in the corporate sector is unaffected by the tax, and no resources are shifted to the noncorporate sector. For a discussion of this issue, see Joseph E. Stigliltz, "Taxation, Corporate Financial Policy, and the Cost of Capital," *Journal of Public Economics*, vol. 2 (February 1973), pp. 1-34; and Ballentine (1980), pp. 51-71.

7. See Martin Feldstein, *Capital Taxation* (Cambridge: Harvard University Press, 1983).

8. This more recent view of the incidence of the corporate income tax is expressed in Arnold C. Harberger, "The State of the Corporate Income Tax: Who Pays It? Should It Be Repealed?," in Charls E. Walker and Mark A. Bloomfield, eds., *New Directions in Federal Tax Policy for the 1980s* (Cambridge, Mass.: Ballinger, 1983).

producing those items. This can lead to a reduction in all incomes if workers and investors drive down wages and the returns to capital in other industries.9/ Even if excise taxes are passed on to family incomes, they impose an additional burden on the uses of income. Relative prices change as the price of those items against which the taxes are levied rise against the prices of other items.

INCIDENCE ASSUMPTIONS USED IN THIS STUDY

This study makes the following assumptions as to the incidence of taxes.

- All of the reduction in spendable income from the individual income tax is assumed to fall on families who directly pay the tax. The tax does not shift among families.

- Workers are assumed to bear both the employee and employer shares of payroll taxes. If some portion of the employer share of the tax is passed forward in the form of higher prices rather than lower wages, high-income families will pay a larger percentage of the tax. But this study assigns all the burden to employee compensation.

- The corporate income tax is allocated in two different ways. Since there is no consensus as to the incidence of the tax, the study uses assumptions that reflect a greater and lesser progressive allocation of the corporate tax. Under the first alternative, the tax is allocated to all capital income. This is the appropriate treatment if the supply of investment capital is fixed, as in an economy where the rate of savings is not responsive to changes in rates of return and domestic capital markets are isolated from international markets. In the second alternative, the tax is allocated to employee compensation. This is an appropriate treatment if the supply of investment capital is highly responsive to taxes and

9. Browning and Johnson (1979) hold that the economic burden of excise taxes falls to family incomes except for income from government transfer programs, because those payments are indexed against increases in the price level.

other prices, or in a world economy with interdependent capital markets.

- Economic theory suggests that excise taxes affect both family incomes and relative prices. The study allocates federal excise taxes only to consumer prices in order to emphasize the impact on relative prices. Because the amount of federal excise taxes is small in comparison to total incomes (about 1 percent), the effect on real family incomes is assumed to come through changes in the price level. Nominal family incomes are thus unaffected by excise taxes.

CHAPTER IV

MEASURING FAMILY INCOME

The distribution of taxes by family income classes depends on the way in which family income is measured. In this study, family income is defined in a manner generally consistent with the definition of income used by the tax system.

The distribution of family income was measured for three representative years during the 1975-1990 period. The years chosen for analysis were 1977, 1984, and 1988. The two historical years were years of relatively high growth in GNP, declining unemployment rates, and rising but relatively modest rates of inflation. The similarity of these years reduces the effect of macroeconomic differences on the results. The years were also chosen to reflect important changes in federal tax law. In 1977, the Tax Reform Act of 1978 and the Economic Recovery Tax Act of 1981 had not yet been enacted. By 1984, those changes were in place, but payroll tax increases enacted in 1983 and the Tax Reform Act of 1986 were yet to come. By 1988, most changes from the 1986 act will be in place.1/

The distribution of family income became more unequal between 1977 and 1984, a trend that is expected to continue through 1988. In particular, a growing share of both labor and capital income was received by the top 1 percent of families in the income distribution. For the lowest 20 percent of families, a drop in government transfer payments was the most significant change between 1977 and 1984.

DEFINING FAMILY INCOME

One straightforward definition of annual income is simply cash received during the year. The cash may come as earnings, returns to

1. The complete elimination of passive losses and the deduction for consumer interest will not be fully phased in until 1991. Taxpayers can claim 40 percent of these deductions in 1988.

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investment, payments from the government, or retirement income. This simple definition, however, excludes items that may be of considerable monetary value but are not received in the form of cash payments. Among these are certain in-kind transfer payments such as food stamps, rent subsidies, government-sponsored Medicare or Medicaid health insurance, and nonmonetary payments by employers such as health and life insurance premiums.

A more comprehensive definition of annual income that measures the change in total family resources is economic income. Economic income includes not only cash and noncash payments received, but also the flow of services from durable items such as houses or automobiles, along with increases in a family's wealth that accrue but are not realized (converted to cash). Under this definition, income includes increases in wealth from appreciation of financial assets such as stocks and bonds, and physical assets such as houses and land. Income also includes the increase in future pension benefits at the time those benefits accrue. Not counted as income in this definition are pension benefits received at retirement and capital gains realized from the sale of stocks, bonds, or physical assets. These activities do not represent new income but only the conversion of existing family wealth into cash.2/

The individual income tax system generally treats income as cash received.3/ It excludes certain types of cash income, such as welfare benefits and, for the majority of taxpayers, Social Security benefits. Nonmonetary payments such as food stamps, Medicare and Medicaid, and employer-provided health insurance are not included in income. Appreciation of financial and physical assets is taxed only when these

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2. Ideally, a comprehensive measure of annual income would include the change in the real value of total family resources rather than the nominal value. Determining income on a real basis requires numerous conceptually and administratively complex adjustments to the accounting systems used by business and the government. These issues are discussed in C. Eugene Steuerle, *Taxes, Loans, and Inflation: How the Nation's Wealth Becomes Misallocated* (Washington, D.C.: The Brookings Institution, 1985).

3. In some circumstances, accrued income or noncash income is taxable under the individual income tax. For example, owners of bonds that have been stripped of their coupons are required to report interest annually. The value of employer-provided health insurance must be included in income if the employer discriminates in favor of highly-paid employees in providing the benefits.

gains are realized. Pension benefits are taxed when they are received rather than as they accrue.

In this study, income is measured in a manner generally consistent with the federal tax system except that all cash transfers are included in family income. Family income includes the following cash income items: **labor income**, consisting of wages, salaries, and self-employment income; **capital income**, comprising net rents, interest, dividends, and realized capital gains; **government transfers**, including Social Security benefits, unemployment insurance benefits, veterans benefits, workers' compensation, AFDC, SSI, and other cash welfare benefits; and **other income**, made up of pension benefits, alimony, and child support. In order to measure income before all federal taxes, family income also includes the employer share of federal social insurance taxes and the federal corporate profits tax.

The derivation of family income for 1977 and 1984 is shown in Table 4. Beginning with the Department of Commerce measure of personal income, adding personal contributions for social insurance, employer contributions for social insurance (excluding nonfederal unemployment insurance taxes), federal corporate profits taxes, and undistributed corporate profits yields pretax adjusted personal income.4/ This measure of income approximates the economic definition of income except that it does not take full account of the change in the value of capital assets. Undistributed corporate profits approximate the change in the value of corporate assets. 5/ Missing, however, are the changes in the value of noncorporate equities, business inventories, farm assets, and nonfarm real estate.

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4. Personal income equals the sum of wage and salary disbursements, other labor income, proprietors' income, rental income, personal dividend and interest income, and transfers, less personal contributions for social insurance. Pretax adjusted personal income can also be derived from national income by adding to national income transfer payments and interest paid by consumers and government, and subtracting interest and dividends received by government, nonfederal corporate income and unemployment insurance taxes, and the excess of wage accruals over wage disbursements.

5. Undistributed corporate profits are thought to measure the change in the value of corporate assets over a long period of time. In any particular year, the change in the value of corporate assets may not reflect that year's profits.

Family income, the measure used in this analysis, equals pretax adjusted personal income minus income received on a noncash basis with adjustments for pensions and capital gains to include cash receipts rather than accruals of pension and capital gains income. The major noncash income exclusions are in-kind government transfer payments and imputed interest payments from banks and other financial intermediaries. Pensions are converted to a cash basis by subtracting employer contributions to private pension and welfare funds and the imputed capital incomes of pension funds, and adding

TABLE 4. DERIVATION OF FAMILY INCOME FOR 1977 AND 1984
(In billions of dollars)

	1977	1984
Personal Income (from the National Income and Product Accounts)	**1,608**	**3,109**
Plus: Additions to Personal Income	257	458
Personal contributions for social insurance	61	133
Employer contributions for social insurance (excluding nonfederal unemployment insurance taxes)	78	172
Corporate profits federal tax liability	56	59
Undistributed corporate profits	62	94
Equals: Adjusted Personal Income	**1,865**	**3,567**
Minus: Deductions from Adjusted Personal Income	**233**	**399**
Noncash federal, state, and local transfer payments	54	131
Noncash wages, rents, interest, and proprietors' income	64	148
Employer contributions for federal, state, and local employee retirement and workers' compensation	32	60
Employer contributions to private pension and welfare funds in excess of cash benefits paid by those funds	66	105
Undistributed corporate profits in excess of realized capital gains	17	-45
Equals: Family Income	**1,632**	**3,168**

SOURCE: National Income and Product Accounts. Realized capital gains are from the Internal Revenue Service, *Statistics of Income*.

cash benefits from private pension plans.6/ Undistributed corporate profits are excluded from income, but realized capital gains are included.

Because it represents a major departure from the way in which economists would prefer to measure income, this treatment of noncash income, pension income, and capital gains merits special discussion.

In-Kind and Imputed Income

Many families receive some in-kind income either from government transfer payments or from nonwage employer income. The major components of in-kind government transfers are Medicare, Medicaid, and food stamps. Most in-kind employment income, or fringe benefits, comes from employer contributions to private health and life insurance funds. However, in-kind employment income also includes less identifiable items, such as the use of company cars, or subsidized meals and travel.

The first problem in measuring in-kind income is assigning an appropriate value to that income. One method is to assign the market value of the good or service--that is, the amount the same good or service sells for in the private market place. However, it is difficult and sometimes impossible to find a private market equivalent for certain types of income. A second approach is to value the good or service at its cash equivalent--that is, the amount of cash that would make the recipient of the item feel equally well off. For low-income families who receive in-kind transfers but could not afford to purchase the same services, the cash-equivalent value may be substantially less than the market value.

The second problem is to determine which families receive in-kind benefits. While recipients of in-kind government transfers are usually identifiable, recipients of certain types of in-kind employment income are difficult to identify from available data.

The major components of imputed income are imputed rents from owner-occupied housing and imputed interest from banks and other

6. Cash benefits from public employee retirement plans are counted as part of government transfer payments.

financial intermediaries. Imputed income from owner-occupied housing is the amount of rent homeowners would have to pay to live in their houses if they did not own them, minus the costs of owning and maintaining the houses. The imputed income from financial institutions is the fees that families would have to pay for the services provided by those institutions. Rather than charge fees, banks and other financial intermediaries often pay a lower rate of interest on money deposited with them than they receive from investment of that money. The difference between the interest paid and interest earned is imputed income earned by the family.

The problems in valuing imputed rental and interest income are similar to those in valuing in-kind income (see above), although it is easier in these cases to find equivalent services in the private market. It is more difficult to determine which families receive imputed income because none of the data used includes complete information on family incomes and assets.

Because of the difficulties in determining the appropriate value of in-kind and imputed income and in assigning values to particular families, the value of all in-kind and imputed income was excluded from the definition of family income used here. Excluding noncash income causes estimated effective tax rates to be higher than they would be if a broader income definition were used. The effect of excluding both in-kind and imputed incomes on the distribution of effective tax rates by income classes is not clear. The exclusion of in-kind benefits, particularly medical insurance, raises effective tax rates by relatively more in the bottom half of the income distribution. Conversely, lower-income families are less likely to own homes or to have other assets that produce imputed income. Excluding imputed income thus raises effective tax rates by relatively more in the upper part of the income distribution.

Pension Income

A method for counting pension income consistent with a comprehensive definition of income would be to count pensions at the time benefits accrue rather than when they are received. For participants in employer-provided defined benefit plans, in which retirement benefits are specified according to years of service and salary at retirement, current income would include the increase in the value of future benefits (properly discounted by the length of time

until retirement and the probability that the negotiated benefits will actually be paid) attributable to employment in the current year. For participants in employer-provided defined contribution plans, in which current contributions by employers into employee retirement accounts are specified but future payments are not, current income would include those contributions plus the yield on the accumulated funds in the retirement account.

In this study, pensions are counted as income when benefits are received. Counting pensions when they are received rather than when they are accrued is consistent with the way they are treated by the tax system. This treatment makes the timing of tax payments match the timing of the measure of income. If pensions were counted at accrual rather than at receipt, actual tax payments could exceed measured income for elderly taxpayers. Tax payments would be low relative to measured incomes for young workers if pension accruals were counted as income, unless accrued tax liabilities also were attributed to these families. Including pensions when they are received rather than accrued eliminates the difficult measurement problem of assigning appropriate amounts of pension accruals and accrued tax liabilities to specific families.

Capital Gains

A comprehensive definition of income measures capital gains as increases in family wealth at the time these gains accrue. The tax system measures capital gains only when they are realized. Including realized rather than accrued capital gains is less satisfactory than the similar treatment of retirement income. First, unlike pensions, many accrued capital gains are never realized. For pensions, the issue is when to count a known amount of income. For capital gains, the issue is not only when to count income but how much of it to count. Second, realizations of capital gains appear to be particularly responsive to changes in the tax system. Thus, measured family income in any particular year reflects a response by families to the tax system. The discretionary aspect of measured income confounds attempts to measure changes in the tax burden. This issue will be treated later in considering actual distributional results.

In this study, only realized capital gains are counted as income. Counting realized rather than accrued gains in family income avoids a number of problems. The first is that of measuring accrued gains.

Over the long term, accrued gains on corporate stock are thought to reflect after-tax corporate profits retained by the corporation. In any particular year, however, gains and losses based on changes in the value of stock have little to do with changes in profits. Accrued gains on other assets such as farms, unincorporated businesses, and housing are difficult to measure.

Even if it were possible to measure accrued gains, assigning these gains to individual families would be difficult. One measure of ownership of corporate stock is the receipt of dividends, but families with low tax rates are more likely than families with high tax rates to own dividend-producing stocks rather than stocks that appreciate in value. Assigning accruals on the basis of dividends could attribute too much income to families in the middle of the income distribution and too little to families at the upper end. Even more formidable are the problems with imputing gains on noncorporate assets. While families that own homes can be identified, the change in the value of those homes is not reported. Families that receive income from unincorporated businesses are also identified, but the reported income from these businesses is often negative and bears little relation to the change in their accrued value.

Measuring Income on an Annual Basis

In this analysis, family income is measured over a single year. Income averaged over a number of years would better represent the true economic circumstances of families than a single year's income, but data available on a multiyear basis for individual taxpayers are inadequate for this study. In any particular year, income may be lower than normal because of a period of unemployment, unusually low income from self-employment, or a drop in investment returns. Capital gains realizations are especially volatile. In any single year, gains will be unusually high if a person sells an asset that has been growing in value for a long time or has changed dramatically in value. If incomes were averaged over a number of years, there would be less dispersion in the distribution of incomes and less dispersion in the distribution of effective tax rates.

Income measured on an annual basis tends to understate the true economic circumstances of many of the lowest-income families. While most taxes are also based on annual incomes and thus reflect a family's current income status, excise taxes, as measured in this

study, depend upon family expenditures. Expenditures probably are related more closely to an expected long-term level of income rather than to income in a single year. Families whose income may have fallen temporarily are likely to maintain their previous level of expenditures in the expectation that their income will return to more normal levels. Young families may spend a large fraction of their current income, even more than 100 percent, because they expect their incomes to rise significantly over time. Measuring the distribution of excise taxes over family income measured in a single year will tend to overstate the burden of those taxes on permanently low-income families.

THE DISTRIBUTION OF FAMILY INCOME IN 1977, 1984, AND 1988

Pretax family income totaled $1,436 billion in 1977 and $2,814 billion in 1984. In each year, pretax family income was equal to 88 percent of family income computed from the National Income and Product Accounts (NIPA) and reported in Table 4. Almost the entire difference resulted from differences in the amount of reported capital incomes and proprietor income, but transfer incomes were also lower than their NIPA equivalents.

Table 5 shows the distribution of total family incomes by population decile and the share received by the top 5 percent and 1 percent of population in 1977, 1984, and 1988 under both allocations of the corporate income tax.7/ In this table and all subsequent tables, the tenth of the population with the lowest incomes excludes families without positive incomes, although those families are included in the totals.

As the table shows, the share of income in all deciles except the two highest declined between 1977 and 1984 under either allocation of the corporate income tax. The share of income in the highest-income decile increased by 10 percent--from a 31.9 percent to a 35.0 percent

7. Family income deciles are formed by dividing the total number of families, ranked by income, into ten equal groups. Because family income includes the family's share of the corporate tax, and because the share depends on which allocation method is used, families may have different incomes and may lie in different deciles under the two allocations.

SOURCES OF DATA ON FAMILY INCOME AND ADJUSTMENTS TO THE DATA

Distributions of family income for 1977 and 1984, and the projected distribution in 1988, are based on data from three sources. The primary source is the March Current Population Survey (CPS) for 1978 and 1985. The CPS is a monthly survey of approximately 60,000 families, conducted by the Bureau of the Census. Each March, the survey collects detailed information on family characteristics and family income in the previous calendar year. The reported data on income from taxable sources from the CPS files were adjusted for consistency with reported income from Statistics of Income (SOI) samples for calendar years 1977 and 1984. The SOI is an extensive annual sample of actual individual income tax returns. Data on consumer expenditures were taken from the 1980 and 1984 Consumer Expenditure Survey (CES) Interview Surveys. The CES Interview Survey is a quarterly panel survey conducted by the Bureau of Labor Statistics. The survey collects detailed data on household expenditures over a 12-month period. The 1980 CES data were adjusted to 1977 levels by changes in per capita expenditures of certain types as reported in the National Income and Product Accounts.

Each of the 1984 files was aged to 1988 using actual growth rates in population, income, and expenditures through 1986, and projected growth rates for 1987 and 1988.

For purposes of comparing the distribution of family incomes in those years, income was divided into four categories: labor income (wages, salaries, and income from self-employment), capital income (rents, interest, dividends, and capital gains), transfer income (Social Security, unemployment insurance, AFDC, SSI, workers compensation, and veterans' benefits), and other income (alimony, child support, and private pension payments).

Many people incur "paper losses" for tax purposes. In order to better approximate the economic income of families, rental losses and most partnership losses were not subtracted from family income. All losses of sole proprietorships were allowed.

Reported pretax family incomes were adjusted to include the amount of the employer share of the Social Security payroll tax, the unemployment insurance payroll tax, and the corporate income tax. The employer share of the Social Security payroll tax, and the unemployment insurance payroll tax, were allocated to the employee on whose behalf the taxes were paid.

The corporate income tax was assigned to incomes in two ways, consistent with the tax incidence assumptions given at the end of Chapter III. In the first alternative, all wages were increased by the ratio of corporate income taxes to total wages. In the second alternative, capital income (consisting of positive rents, interest, dividends, and an adjusted amount of realized capital gains) was increased by the ratio of corporate taxes to the sum of capital income. a/

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a. Total adjusted capital gains in a particular year are computed as a fixed percentage of national income. Each family's share of adjusted gains is assumed to be the same as its share of realized gains. This procedure prevents assignment of a disproportionate share of the corporate tax to capital gains in those years when realizations are especially high.

share--under the allocation of the corporate tax to capital income and by 12 percent--from a 30.6 percent share to a 34.4 percent share--under the allocation of the tax to labor income. The share of income for the top 1 percent of families increased by two to three percentage points, depending upon the allocation of the corporate tax. Tables contained in Appendix A show the distribution of separate components of income by family income decile. The results shown in those tables indicate that the increase in the top decile's share of income between 1977 and 1984 resulted from an increase in its share of all types of income.

The distribution of family income in 1988 is expected to look much the same as in 1984. The top decile's share of income, however, is expected to increase further.

TABLE 5. DISTRIBUTION OF TOTAL FAMILY INCOME BY POPULATION DECILE (In percent)

Decile a/	1977 Corporate Tax Allocated to		1984 Corporate Tax Allocated to		1988 Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
First b/	1.1	1.1	0.9	0.9	0.9	0.9
Second	2.5	2.5	2.3	2.3	2.2	2.2
Third	3.9	3.9	3.6	3.6	3.6	3.6
Fourth	5.4	5.5	5.0	5.0	5.0	5.0
Fifth	7.1	7.1	6.5	6.6	6.5	6.5
Sixth	8.7	8.9	8.2	8.3	8.1	8.2
Seventh	10.6	10.9	10.1	10.2	10.0	10.2
Eighth	12.9	13.2	12.6	12.8	12.5	12.7
Ninth	16.2	16.6	16.3	16.4	16.1	16.4
Tenth	31.9	30.6	35.0	34.4	35.7	34.9
Top 5 percent	21.5	20.1	24.3	23.7	25.1	24.2
Top 1 percent	9.2	8.1	11.8	11.2	12.5	11.8
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE; Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

Table 6 shows average family income for each family income decile and for the top 5 percent and 1 percent of families in 1977, 1984, and 1988. Average incomes are shown in nominal and 1987 dollars for both corporate tax allocations. A comparison of average incomes in 1987 dollars shows that, despite an increase in the overall average, incomes in all but the top decile declined in real terms between 1977 and 1984. These decreases were offset by particularly large increases in the average income of families in the top 1 percent of the income distribution. While average real incomes are projected to increase in all income deciles between 1984 and 1988, the largest percentage increase by far will occur for families in the top of the income distribution.

TABLE 6. AVERAGE FAMILY INCOME IN EACH POPULATION DECILE, BY YEAR AND TREATMENT OF CORPORATE TAX

Decile a/	1977 Corporate Tax Allocated to		1984 Corporate Tax Allocated to		1988 Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
In Nominal Dollars						
First b/	2,191	2,189	3,096	3,102	3,676	3,685
Second	4,438	4,435	6,756	6,769	8,043	8,064
Third	6,974	6,992	10,768	10,820	12,874	12,964
Fourth	9,722	9,810	15,044	15,130	17,967	18,108
Fifth	12,562	12,715	19,600	19,737	23,324	23,544
Sixth	15,590	15,869	24,685	24,906	29,333	29,660
Seventh	18,892	19,371	30,461	30,756	36,174	36,625
Eighth	22,960	23,575	37,938	38,403	45,045	45,752
Ninth	28,869	29,525	48,833	49,399	58,103	58,957
Tenth	56,917	54,659	105,114	103,293	128,631	125,808
Top 5 percent	76,571	71,591	146,129	141,954	180,842	174,582
Top 1 percent	163,448	143,696	352,601	335,392	452,024	425,440
All Deciles c/	17,840	17,840	30,022	30,022	36,043	36,042
In 1987 Dollars						
First b/	4,118	4,113	3,395	3,401	3,496	3,504
Second	8,340	8,334	7,407	7,422	7,648	7,669
Third	13,106	13,140	11,807	11,863	12,242	12,327
Fourth	18,271	18,436	16,495	16,589	17,085	17,220
Fifth	23,609	23,896	21,490	21,640	22,179	22,389
Sixth	29,299	29,824	27,066	27,308	27,894	28,205
Seventh	35,505	36,405	33,399	33,721	34,399	34,828
Eighth	43,149	44,305	41,596	42,106	42,834	43,507
Ninth	54,254	55,487	53,542	54,163	55,252	56,064
Tenth	106,966	102,722	115,251	113,254	122,320	119,635
Top 5 percent	143,904	134,543	160,221	155,643	171,969	166,016
Top 1 percent	307,174	270,053	386,603	367,734	429,845	404,566
All Deciles c/	33,527	33,527	32,917	32,917	34,274	34,274

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

CHAPTER V

THE DISTRIBUTION OF FEDERAL TAXES IN 1977, 1984, AND 1988

This chapter presents estimates of effective tax rates by family income classes in 1977, 1984, and 1988.1/ Between 1977 and 1984 the distribution of total federal taxes became less progressive by this measure. This change reflects primarily a shift in the tax burden at either end of the income distribution. Effective tax rates rose for families in the lowest-income decile and fell for families in the highest. Between 1984 and 1988 the distribution of taxes is projected to become more progressive but to remain less progressive than in 1977. Results are shown for each of the two different assumptions concerning the allocation of the corporate tax. Appendix B contains tables for two additional distributional measures--the share of total taxes paid by each income group and the distribution of tax payments by type of tax within each decile.

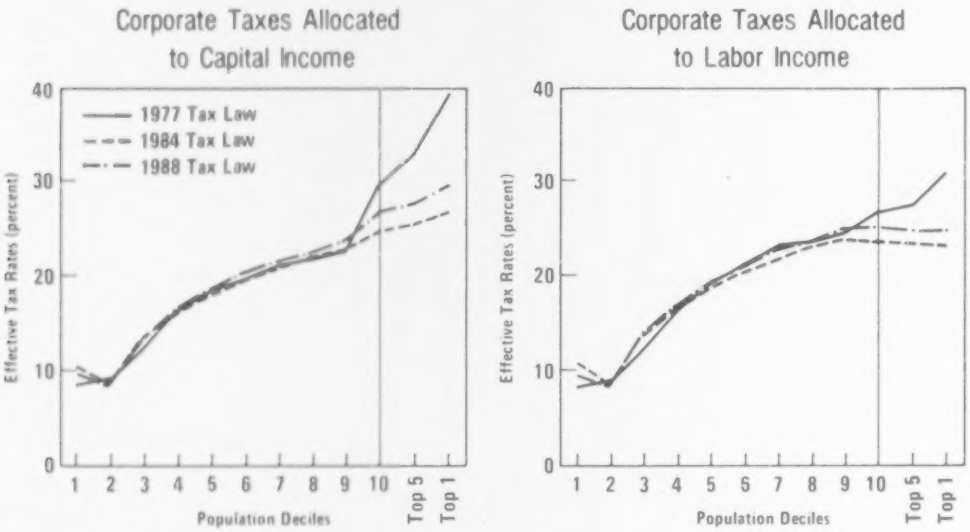
COMPARISONS OF FEDERAL TAXES OVER YEARS

Figure 5 compares total effective tax rates in 1977, 1984, and 1988 under the two alternative assumptions about the allocation of the corporate income tax. Under either allocation, Figure 5 indicates a decrease in the progressivity of total federal taxes between 1977 and 1984, and a small increase in progressivity between 1984 and

1. For all tax sources, federal taxes were estimated as calendar year liabilities (some of which may not be paid to the government until the following year). Individual income taxes, payroll taxes, and excise taxes were allocated to each family using CBO tax simulation models. Because the individual income tax includes the refundable portion of the earned income credit, tax liabilities can be less than zero. (The refundable portion of the earned income credit technically is an outlay rather than an offset to revenues, but the credit is administered by the Internal Revenue Service as part of the tax system.) Payroll taxes include the employee and employer shares of the Social Security payroll tax and the mandatory federal unemployment insurance tax. (The budget treats all unemployment taxes--both the federal tax and the additional state taxes--as federal revenues because they are paid into a federal trust fund.) Neither excise taxes nor total taxes include the windfall profit tax.

Figure 5.

Effective Federal Tax Rates by Population Decile (All taxes combined)



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

1988--although in 1988 tax rates remain less progressive than in 1977.2/

The federal tax system appears more progressive when the corporate income tax is allocated to capital income than when it is allocated to labor income. The top decile of the population pays about 60 percent of the corporate tax under the capital allocation but only about 30 percent under the labor allocation.

For most deciles the change in effective tax rates between 1977 and 1984 was relatively small. For families in the lowest-income decile, however, the total effective tax rate increased from 8.3 percent to 10.3 percent with the corporate tax allocated to capital income, and from 8.0 percent to 10.5 percent with the corporate tax allocated to

2. Two measures often used to summarize the progressivity of the tax system--the difference between the pretax and post-tax Gini coefficient and the Suits index--are described and shown in Appendix C.

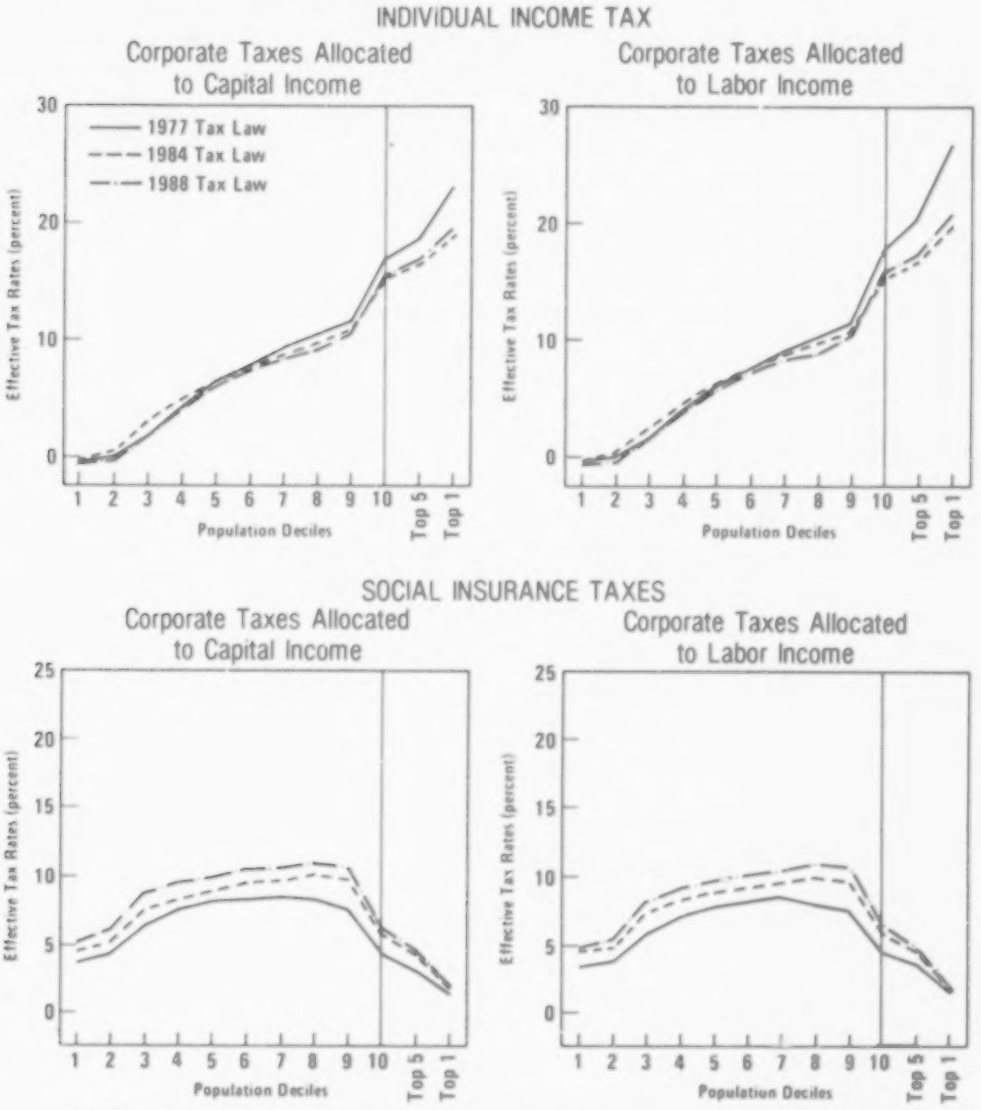
labor income. The effective tax rate for families in the highest-income decile declined dramatically between 1977 and 1984, from 29.5 percent to 24.8 percent for the capital income allocation of corporate taxes and from 26.7 percent to 23.6 percent for the labor income allocation. For the top 1 percent of families, the total effective tax rate declined from 39.2 percent in 1977 to 26.9 percent in 1984 with the corporate tax allocated to capital income, and from 30.9 percent to 23.1 percent with the corporate tax allocated to labor income.

By 1988, the effective tax rate for families in the lowest-income decile will decline slightly from its 1984 level, by 0.6 to 0.9 percentage points depending on the allocation of the corporate income tax, but will remain about 1.5 percentage points higher than in 1977. Between 1984 and 1988, the rate for families in the highest-income decile will increase by 1.4 to 1.8 percentage points depending upon the allocation of the corporate tax. The rate for the highest decile will remain two to three percentage points lower than it was in 1977.

Figure 6 illustrates effective tax rates for the individual income tax and for social insurance taxes under both allocations of the corporate tax. Because family income includes a family's share of the corporate income tax, these effective tax rates depend on the allocation of the corporate income tax. The differences are small enough, however, that for each tax the two distributions of effective tax rates look quite similar. Between 1977 and 1984, effective individual income tax rates rose for families in the bottom two-fifths of the income distribution and fell for families in the top two-fifths. The change in effective rates for the highest-income decile was the most dramatic, falling by 1.9 to 2.5 percentage points--about an 11 percent to 14 percent reduction in effective tax rates. Between 1984 and 1988, the effective individual income tax rate will fall for all income deciles except the highest. For every income group, the effective rate in 1988 will be the same as or lower than in 1977, with the largest drops for the higher-income groups. The lowest two deciles will have negative effective rates in 1988.

The effective tax rates for social insurance will rise between 1977 and 1988 for every group, reflecting the increase in the combined employer and employee Social Security tax rate from 11.70 percent to 15.02 percent. Between 1977 and 1984, effective tax rates increased faster for the higher-income groups because the maximum amount of earnings subject to tax rose nearly 40 percent faster than wages. The effective tax rate rises with income through the seventh decile in 1977

Figure 6.
Effective Federal Tax Rates by Population Decile



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

and through the eighth decile in the later years. The effective rate falls for families in the highest groups because they pay taxes on only part of their earnings, and because earnings are a smaller share of their income.

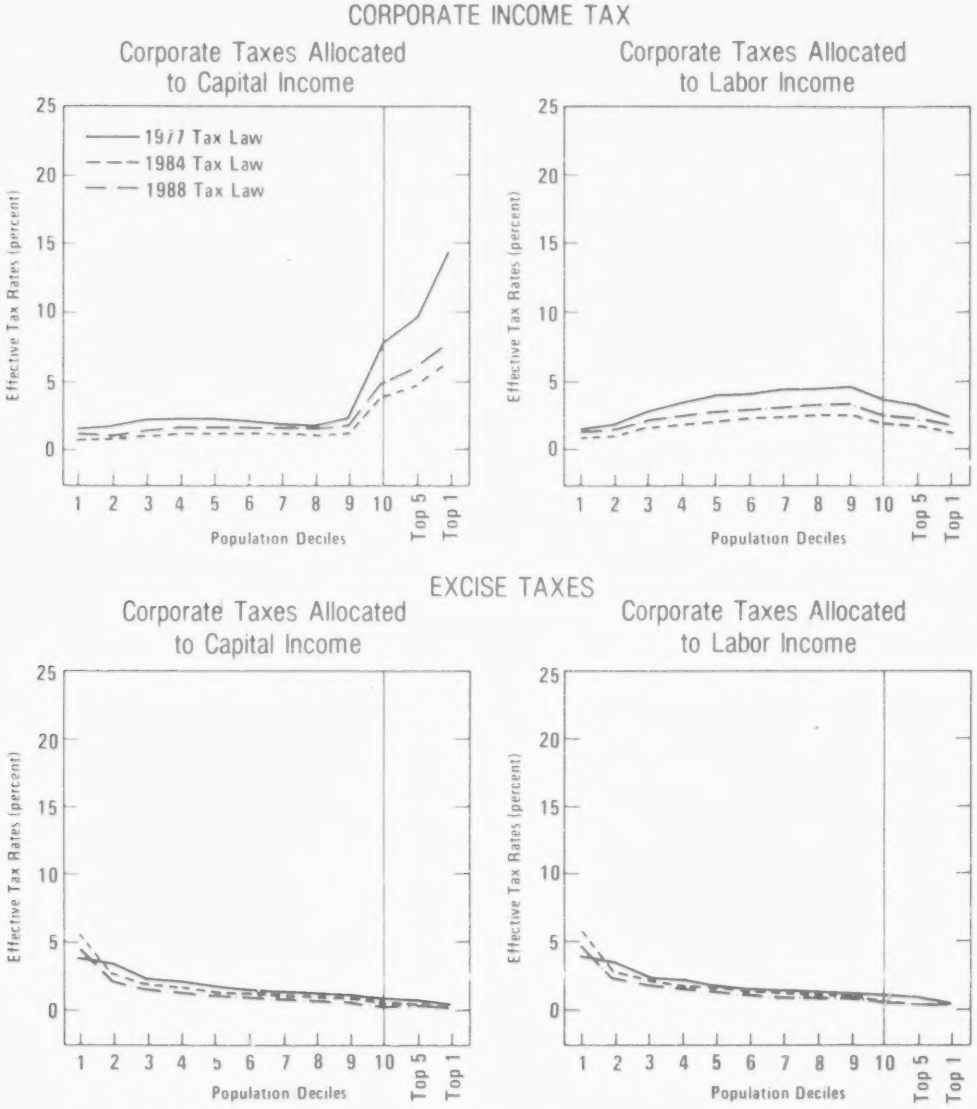
The effective social insurance tax rate is higher than the effective income tax rate for the lowest six income deciles in 1977, the lowest eight deciles in 1984, and all but the highest decile in 1988.

Figure 7 shows effective corporate income tax rates and effective excise tax rates under both allocations of the corporate income tax. The pattern of effective corporate tax rates in Figure 7 depends on the allocation of the tax. When the tax is allocated to capital income, the top income categories have much higher tax rates than the other nine deciles. The bottom deciles have somewhat lower rates than the middle ones. When the tax is allocated to labor income, the middle deciles have the highest effective corporate tax rates. Families in the top decile, especially those in the top 1 percent and 5 percent, have lower tax rates than average because labor income is a smaller share of their income than for the average family. The level of the corporate tax rate is almost 50 percent lower in 1984 than in 1977, and projected to be about 30 percent lower in 1988 than in 1977. As Table 3 showed, the 1984 rate reflects both a lower profit share of GNP and a lower tax rate on profits. The lower rate for 1988 primarily reflects a lower profit share.

The effective excise tax rate falls with income in all three years under either corporate tax allocation. For all groups except the lowest, the tax rate is lower in 1984 and 1988 than in 1977. The increase in the real value of the tax on gasoline and the drop in the real income of the bottom decile are responsible for the increase in the effective tax rate for the lowest-income families.

The complete set of estimated effective tax rates, for combined taxes and for each of the four major tax sources, is shown in Tables 7 and 8.

Figure 7.
Effective Federal Tax Rates by Population Decile



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

TABLE 7. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE: CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
			1977		
First b/	-0.5	3.6	1.5	3.7	8.3
Second	0.0	4.2	1.6	3.3	9.1
Third	1.8	6.2	2.2	2.1	12.3
Fourth	4.3	7.4	2.3	2.0	16.1
Fifth	6.3	8.0	2.3	1.6	18.2
Sixth	7.8	8.1	2.2	1.5	19.6
Seventh	9.2	8.4	1.9	1.3	20.9
Eighth	10.5	8.1	1.8	1.2	21.7
Ninth	11.7	7.5	2.3	1.1	22.6
Tenth	17.0	4.2	7.6	0.7	29.5
Top 5 percent	18.8	3.0	9.7	0.6	32.5
Top 1 percent	23.2	1.2	14.5	0.3	39.2
All Deciles c/	11.1	6.5	3.9	1.3	22.8
			1984		
First b/	-0.4	4.4	0.7	5.6	10.3
Second	0.3	5.0	0.8	2.6	8.7
Third	2.8	7.5	1.0	2.0	13.4
Fourth	4.8	8.3	1.3	1.7	16.1
Fifth	6.3	8.9	1.3	1.4	18.0
Sixth	7.8	9.4	1.3	1.2	19.6
Seventh	8.7	9.6	1.3	1.1	20.7
Eighth	9.7	10.0	1.2	1.0	22.0
Ninth	10.9	9.7	1.3	0.9	22.8
Tenth	15.1	5.6	3.7	0.5	24.8
Top 5 percent	16.3	4.1	4.6	0.4	25.4
Top 1 percent	18.8	1.7	6.2	0.2	26.9
All Deciles c/	10.6	8.0	2.1	1.0	21.7
			1988		
First b/	-0.8	5.0	1.1	4.5	9.7
Second	-0.4	5.9	1.0	2.1	8.6
Third	1.7	8.6	1.3	1.6	13.3
Fourth	4.1	9.4	1.6	1.4	16.5
Fifth	5.9	9.8	1.6	1.1	18.5
Sixth	7.2	10.4	1.6	1.0	20.2
Seventh	8.3	10.5	1.7	0.9	21.4
Eighth	9.0	10.9	1.6	0.8	22.3
Ninth	10.4	10.6	1.7	0.8	23.4
Tenth	15.5	6.0	4.7	0.4	26.6
Top 5 percent	16.9	4.4	5.7	0.4	27.4
Top 1 percent	19.7	1.8	7.7	0.2	29.3
All Deciles c/	10.4	8.7	2.7	0.9	22.7

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE 8. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE: CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
		1977			
First b/	-0.4	3.2	1.5	3.7	8.0
Second	-0.1	3.7	1.7	3.3	8.7
Third	1.5	5.7	2.7	2.1	12.0
Fourth	4.0	6.9	3.3	2.0	16.2
Fifth	6.1	7.7	3.8	1.5	19.1
Sixth	7.6	8.0	4.0	1.4	21.0
Seventh	9.0	8.3	4.4	1.3	23.0
Eighth	10.2	7.8	4.4	1.2	23.6
Ninth	11.5	7.4	4.5	1.1	24.5
Tenth	17.8	4.5	3.6	0.7	26.7
Top 5 percent	20.3	3.5	3.2	0.6	27.5
Top 1 percent	26.7	1.5	2.3	0.3	30.9
All Deciles c/	11.1	6.5	3.9	1.3	22.8
		1984			
First b/	-0.4	4.3	0.9	5.6	10.5
Second	0.2	4.7	1.0	2.6	8.5
Third	2.5	7.1	1.6	2.0	13.2
Fourth	4.7	8.1	1.8	1.6	16.3
Fifth	6.3	8.8	2.0	1.4	18.5
Sixth	7.6	9.1	2.2	1.2	20.1
Seventh	8.7	9.5	2.3	1.1	21.5
Eighth	9.7	9.9	2.4	1.0	23.0
Ninth	10.8	9.6	2.4	0.9	23.8
Tenth	15.3	5.8	1.9	0.5	23.6
Top 5 percent	16.8	4.4	1.7	0.4	23.3
Top 1 percent	19.8	1.8	1.3	0.2	23.1
All Deciles c/	10.6	8.0	2.1	1.0	21.7
		1988			
First b/	-0.8	4.7	1.2	4.5	9.6
Second	-0.5	5.3	1.4	2.1	8.3
Third	1.5	8.0	2.1	1.6	13.3
Fourth	4.0	9.0	2.4	1.4	16.8
Fifth	5.8	9.6	2.6	1.1	19.2
Sixth	7.1	10.0	2.8	1.0	20.9
Seventh	8.2	10.3	2.9	0.9	22.3
Eighth	8.9	10.8	3.1	0.8	23.6
Ninth	10.3	10.5	3.1	0.8	24.7
Tenth	15.8	6.3	2.5	0.5	25.0
Top 5 percent	17.5	4.8	2.3	0.4	24.9
Top 1 percent	20.9	1.9	1.9	0.3	24.9
All Deciles c/	10.4	8.7	2.7	0.9	22.7

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

CHAPTER VI

THE EFFECT OF TAX LAW CHANGES ON THE DISTRIBUTION OF FEDERAL TAXES

Changes in the distribution of taxes over years are not the result solely of changes in the tax law. The level and distribution of family income also change between years. The distribution of effective tax rates shifts between years for three reasons: changes in the tax law change the relationship between income and taxes; changes in the tax law cause families to alter their economic behavior, thereby changing the level and distribution of incomes; and incomes change for reasons independent of the tax law. Because it is difficult to distinguish accurately between changes in income caused by changes in the tax law and changes in income resulting from other causes, the full effect of changes in the law on the distribution of tax liabilities is not readily measurable. By holding constant the level and distribution of incomes, however, it is possible to isolate the effect of changes in the law on the relationship between income and taxes.

This section compares the distribution of taxes under 1977, 1984, and 1988 tax laws holding incomes constant at their 1984 and 1988 levels. The constant-income distributions of federal taxes show generally the same results as the previous distributions, but with less dramatic differences between 1977 and the other years for the highest-income decile. Effective tax rates for all but the highest-income decile are lower under 1977 law than under 1984 law, evaluated at either 1984 or 1988 incomes and with either allocation of the corporate income tax.

CONSTANT 1984 INCOME COMPARISONS

To make comparisons in terms of 1984 income, the 1977 and 1988 tax laws were income-indexed so that the effective tax rates in 1984 for 1977 and 1988 law would be the same as the effective rates in 1977 and 1988, except for changes in the distribution and composition of income. A family with exactly the average family income in 1984 would have the same effective tax rate for 1977 law indexed to 1984 as a family with average family income and the same composition of

income in 1977. In the case of the individual income tax laws, this was done by inflating from 1977 (or deflating from 1988) all individual income tax parameters in the tax year, such as personal exemption amounts, standard deductions, and bracket boundaries, by the change in per family taxable personal income between 1984 and the tax year.1/ Equivalent Social Security tax laws were constructed by inflating (or deflating) the maximum taxable earnings amount by the change in per family wage and salary income between the tax year and 1984. Alternative corporate income taxes were determined by multiplying 1984 corporate profits by the ratio of taxes to profits in 1977 and 1988. Excise taxes were indexed by assuming that each family would pay taxes at the same effective rate as a family with the same relative income in 1977 or 1988.

The corporate income tax, excise taxes, and the employer portion of the Social Security payroll tax under adjusted 1977 and 1988 laws are not equal to the actual amount of those taxes in 1984. Because pretax family income includes the amount of these taxes and is held constant under all three laws in 1984, certain adjustments were made to reported family incomes. For example, adjusted 1977 corporate income taxes in 1984 were $85 billion compared with $59 billion of actual 1984 corporate income taxes. This difference in corporate income taxes implied that either capital or labor income paid to families would have been $26 billion lower in 1984, depending on the corporate income tax incidence assumption used, if the equivalent 1977 corporate income tax law had been in effect in 1984. Thus, under the first allocation of corporate income taxes, all capital incomes were reduced to make up the difference between actual 1984 corporate income taxes and adjusted 1977 taxes, while under the second allocation labor incomes were decreased. Individual income tax liabilities and, with the allocation to labor income, Social Security payroll tax liabilities, were reduced based on the decrease in income. A similar procedure was used to adjust for differences in the employer share of Social Security payroll taxes. Because the assumptions concerning the incidence of excise taxes used in this study imply that excise taxes have no effect on nominal family incomes, no adjustment was necessary for differences in excise taxes.

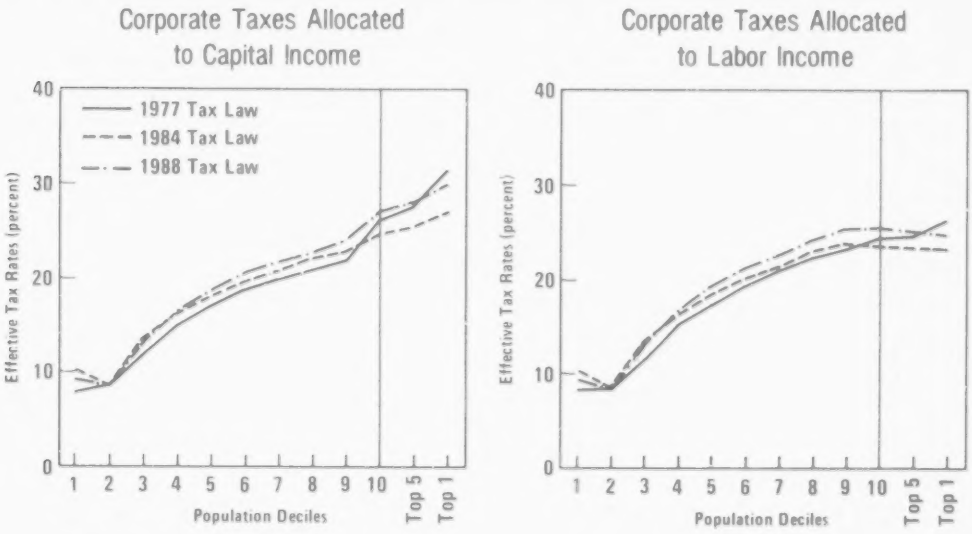
1. Taxable personal income is the sum of wages and salaries, of proprietors' income, and of personal rents, interest, and dividends.

Figure 8 compares total effective tax rates in 1984 under 1984 tax laws and under 1977 and 1988 tax laws adjusted to 1984. The greater progressivity of 1977 tax law in the high and the low end of the income distribution is still apparent, but for the highest decile the differences between 1977 law and 1984 and 1988 law are reduced. The corporate tax accounts for most of the differences between the effective tax rate for the highest decile in 1977 as compared with 1977 law in 1984. The 1977 corporate tax structure would generate relatively less revenue with the lower 1984 profit share. Although the effective tax rates are lowest under 1977 law for families in the second through ninth deciles, the rate at which effective tax rates increase between those deciles is about the same under all three tax laws.

Tables 9 and 10 show the complete distribution of total effective tax rates and effective tax rates for each type of tax in 1984 under the three different tax laws.

Figure 8.

Effective Federal Tax Rates by Population Decile, 1984, Under Tax Laws Adjusted to 1984 Incomes (All taxes combined)



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

TABLE 9. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE, WITH CONSTANT 1984 INCOMES: CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
Income-Indexed 1977 Tax Law					
First b/	-0.6	3.8	1.0	3.7	7.9
Second	-0.5	4.3	1.1	3.5	8.4
Third	1.5	6.5	1.5	2.2	11.7
Fourth	3.9	7.1	1.8	2.1	14.9
Fifth	5.8	7.6	1.9	1.6	16.9
Sixth	7.4	8.1	1.8	1.5	18.8
Seventh	8.7	8.0	1.9	1.3	19.9
Eighth	10.2	7.8	1.7	1.2	20.9
Ninth	11.7	7.2	1.9	1.1	21.9
Tenth	16.4	3.9	5.3	0.6	26.2
Top 5 percent	17.8	2.8	6.5	0.5	27.6
Top 1 percent	21.1	1.1	8.9	0.2	31.3
All Deciles c/	11.0	6.2	3.0	1.2	21.5
Actual 1984 Tax Law					
First b/	-0.4	4.4	0.7	5.6	10.3
Second	0.3	5.0	0.8	2.6	8.7
Third	2.8	7.5	1.0	2.0	13.4
Fourth	4.8	8.3	1.3	1.7	16.1
Fifth	6.3	8.9	1.3	1.4	18.0
Sixth	7.8	9.4	1.3	1.2	19.6
Seventh	8.7	9.6	1.3	1.1	20.7
Eighth	9.7	10.0	1.2	1.0	22.0
Ninth	10.9	9.7	1.3	0.9	22.8
Tenth	15.1	5.6	3.7	0.5	24.8
Top 5 percent	16.3	4.1	4.6	0.4	25.4
Top 1 percent	18.8	1.7	6.2	0.2	26.9
All Deciles c/	10.6	8.0	2.1	1.0	21.7
Income-Indexed 1988 Tax Law					
First b/	-0.8	4.8	1.0	4.1	9.1
Second	-0.3	5.5	1.1	2.1	8.4
Third	1.8	8.2	1.5	1.6	13.1
Fourth	4.3	9.1	1.8	1.3	16.5
Fifth	5.9	9.8	1.8	1.1	18.6
Sixth	7.5	10.3	1.8	1.0	20.5
Seventh	8.5	10.4	1.9	0.9	21.7
Eighth	9.4	10.9	1.7	0.8	22.8
Ninth	10.9	10.6	1.8	0.8	24.0
Tenth	15.4	6.1	5.1	0.4	27.1
Top 5 percent	16.7	4.5	6.4	0.3	28.0
Top 1 percent	19.2	1.9	8.6	0.2	29.9
All Deciles c/	10.5	8.7	2.9	0.8	23.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

TABLE 10. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE, WITH CONSTANT 1984 INCOMES: CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
Income-Indexed 1977 Tax Law					
First b/	-0.5	3.7	1.3	3.7	8.2
Second	-0.6	3.9	1.4	3.5	8.3
Third	1.2	6.0	2.2	2.2	11.6
Fourth	3.7	6.9	2.6	2.0	15.2
Fifth	5.6	7.4	2.9	1.6	17.5
Sixth	7.2	7.7	3.1	1.5	19.5
Seventh	8.5	7.9	3.3	1.3	21.0
Eighth	9.9	7.7	3.5	1.2	22.3
Ninth	11.4	7.1	3.5	1.1	23.1
Tenth	16.9	4.0	2.8	0.7	24.3
Top 5 percent	18.7	2.9	2.5	0.5	24.6
Top 1 percent	22.9	1.1	1.8	0.2	26.1
All Deciles c/	11.0	6.2	3.0	1.2	21.4
Actual 1984 Tax Law					
First b/	-0.4	4.3	0.9	5.6	10.5
Second	0.2	4.7	1.0	2.6	8.5
Third	2.5	7.1	1.6	2.0	13.2
Fourth	4.7	8.1	1.8	1.6	16.3
Fifth	6.3	8.8	2.0	1.4	18.5
Sixth	7.6	9.1	2.2	1.2	20.1
Seventh	8.7	9.5	2.3	1.1	21.5
Eighth	9.7	9.9	2.4	1.0	23.0
Ninth	10.8	9.6	2.4	0.9	23.8
Tenth	15.3	5.8	1.9	0.5	23.6
Top 5 percent	16.8	4.4	1.7	0.4	23.3
Top 1 percent	19.8	1.8	1.3	0.2	23.1
All Deciles c/	10.6	8.0	2.1	1.0	21.7
Income-Indexed 1988 Tax Law					
First b/	-0.8	4.7	1.3	4.1	9.3
Second	-0.3	5.0	1.4	2.1	8.2
Third	1.6	7.6	2.2	1.6	12.9
Fourth	4.1	8.8	2.5	1.3	16.8
Fifth	5.8	9.5	2.8	1.1	19.2
Sixth	7.4	9.9	3.0	1.0	21.2
Seventh	8.4	10.2	3.2	0.9	22.7
Eighth	9.2	10.7	3.4	0.8	24.1
Ninth	10.7	10.4	3.4	0.7	25.2
Tenth	15.8	6.3	2.7	0.4	25.3
Top 5 percent	17.5	4.8	2.4	0.4	25.0
Top a percent	20.7	2.0	1.8	0.2	24.7
All Deciles c/	10.5	8.6	2.9	0.8	22.9

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

CONSTANT 1988 INCOME COMPARISONS

While holding both the level and the distribution of income constant at a particular year's level helps to isolate the effects of different tax laws, the results still depend on incomes in that year. This may present a biased comparison if families adjust their incomes to take advantage of the tax law actually in effect in that year. For example, of all major types of income, realized capital gains appear to be the most immediately responsive to changes in the individual income tax law. In 1984, the maximum marginal tax rate on long-term capital gains was 20 percent. By 1988, the maximum tax rate will be 28 percent (33 percent over some ranges of income). Realized capital gains, which were $139 billion in 1984, would probably have been much lower if the equivalent 1988 tax law had been in effect. Because the share of capital gains in the upper part of the income distribution is greater than the overall share of income, equivalent 1988 law in 1984 overstates both income and taxes paid by the higher-income deciles compared to what they would have been if equivalent 1988 law actually had been in effect in 1984.

The same problem exists for other types of income to the extent that families adjust their receipt of such income in response to particular tax laws. In an attempt to control for these problems, the distribution of taxes by population decile was also estimated under equivalent 1977 and 1984 tax laws at the 1988 level and distribution of family income. The procedures were the same as with the equivalent tax law estimates for 1984.

Figure 9 compares total effective tax rates in 1988 under 1988 tax laws and under 1977 and 1984 tax laws adjusted to 1988. The results for constant 1988 incomes are quite similar to those for 1984 because the distributions of income are similar. Even though realized capital gains are forecast to be smaller in 1988 than they would have been without tax reform, the drop in realizations resulting from tax reform is offset by the recent rapid growth in gains attributable to stock market growth and other factors, leaving realizations similar as a share of income in 1984 and 1988.

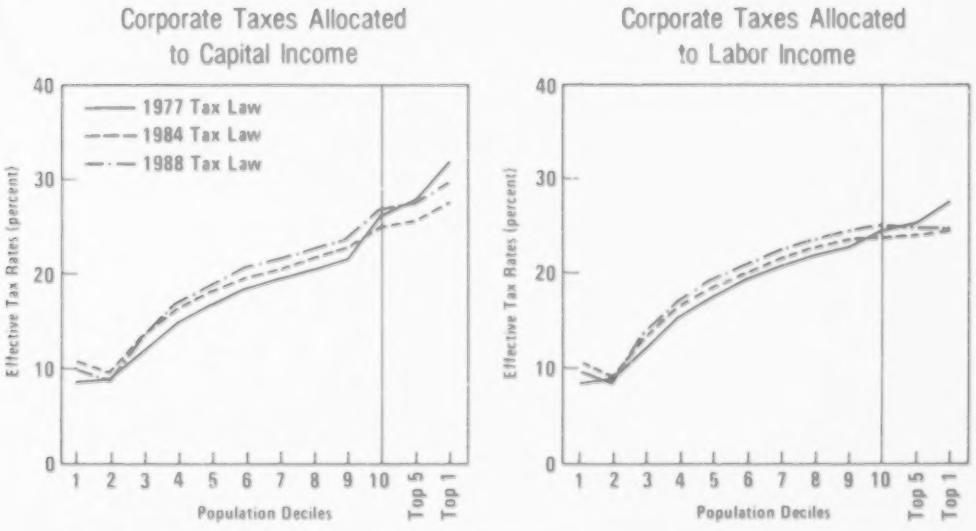
Figure 10 shows effective tax rates under the three different tax laws in 1988 for individual income and Social Security payroll taxes. The results in Figure 10 are quite similar to the results in Figure 6, which showed effective individual income and Social Security payroll tax rates in different years. For both 1977 and 1984 tax laws, the

change in effective tax rates as incomes increase is about the same whether the laws are evaluated at current incomes or at 1988 incomes. The levels of effective tax rates for 1977 and 1984 tax laws are different, however, if the laws are evaluated at 1988 incomes rather than at current incomes.

Effective individual income tax rates for income-indexed 1977 tax law are somewhat lower than the effective rates under actual 1977 law. For families in the first through ninth deciles, incomes grew less than the overall average growth in income between 1977 and 1988. Because income-indexed 1977 tax law was adjusted to the average growth in income between 1977 and 1988, effective tax rates for families in the lower nine deciles are less under 1977 income-indexed law than under 1977 tax law. For families in the top decile, capital gains make up a larger percentage of income in 1988 than in 1977. Because 50 percent of capital gains are excluded from taxable income under 1977 law, the higher capital gains share results in slightly lower effective tax rates for families in the top decile under income-indexed 1977 law than under actual 1977 law.

Figure 9.

Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes (All taxes combined)



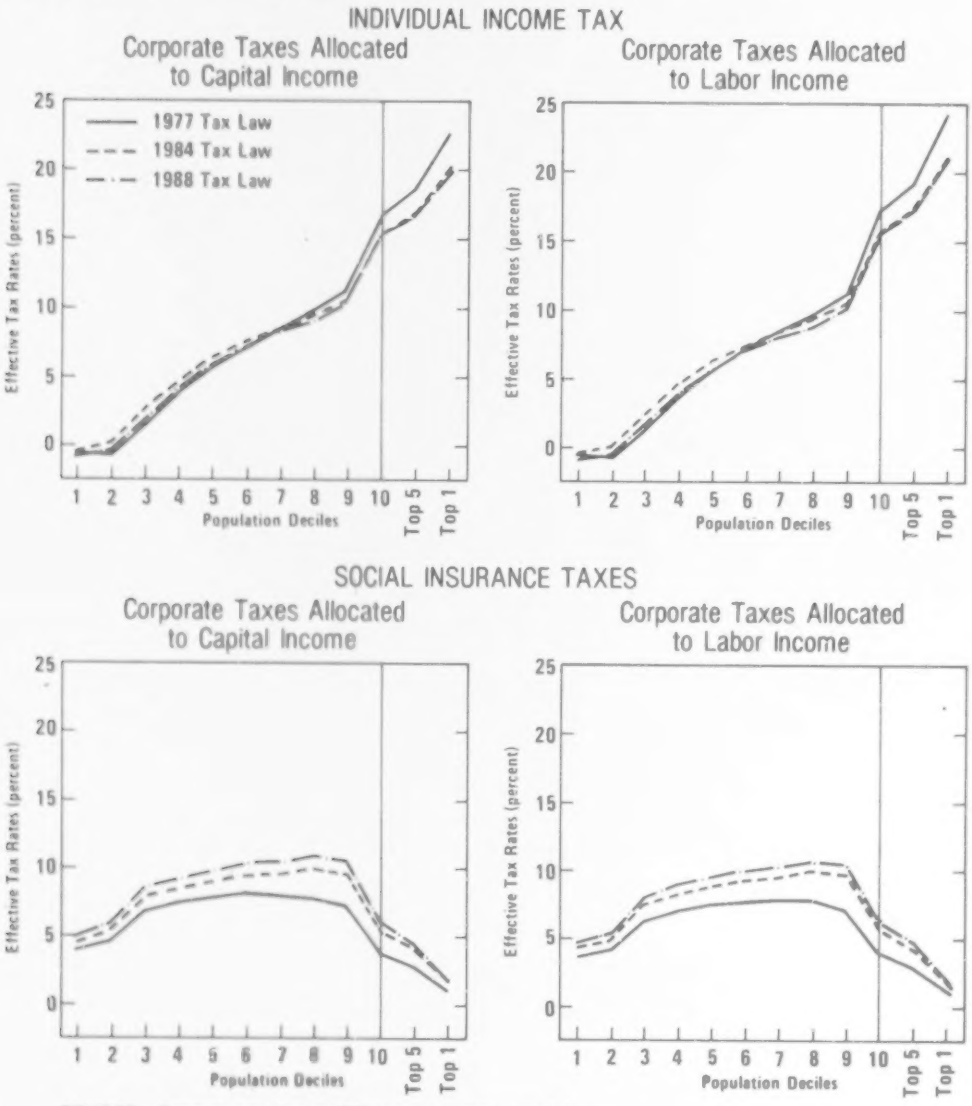
SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

Figure 10.

Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

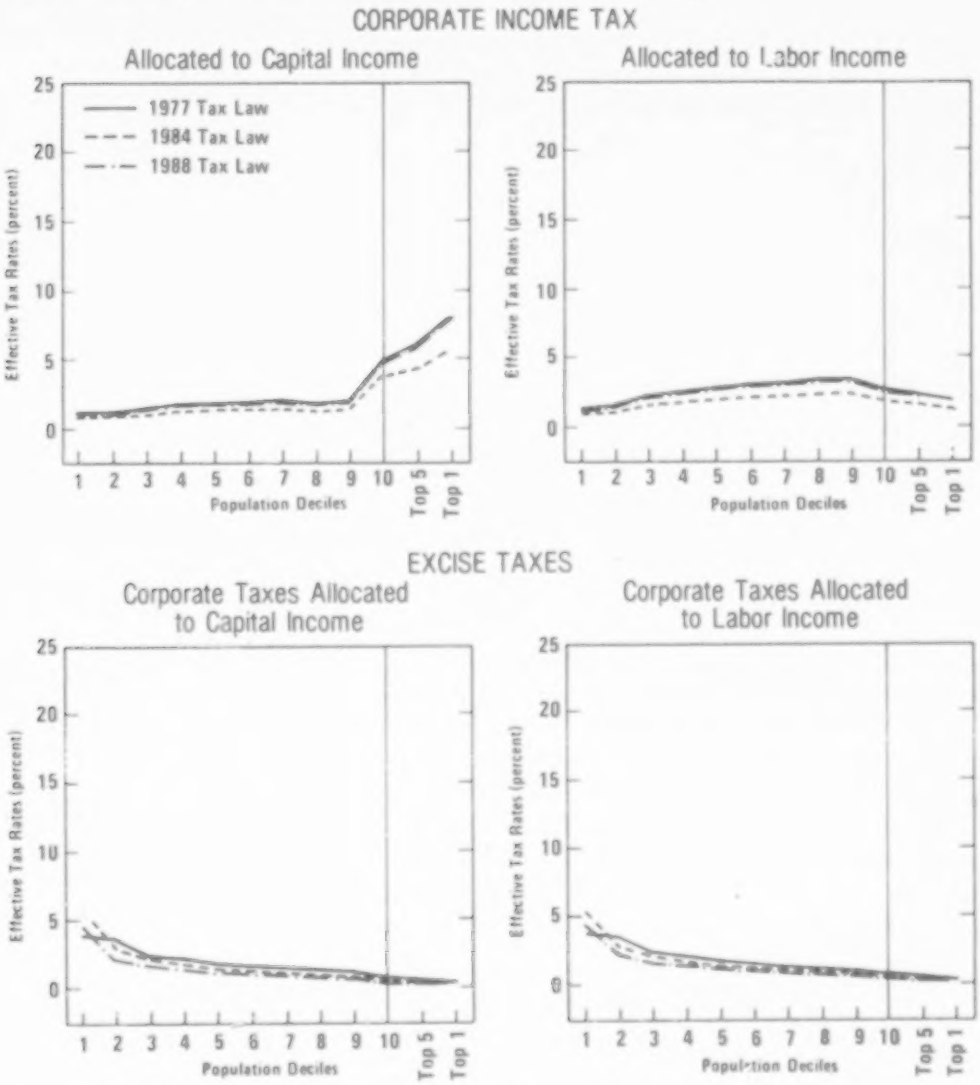
Lower-income families show slightly higher effective social insurance tax rates under income-indexed 1977 law than under actual 1977 law, reflecting a larger percentage of income from wages for these families in 1988 than in 1977. A reduction in the percentage of income from wages for higher-income families explains the small reduction in effective social insurance tax rates for families in the upper-two fifths of the income distribution.

Figure 11 shows effective corporate income and excise tax rates under the three different tax laws in 1988. The results in Figure 11 for corporate income taxes are quite different from the results in Figure 7, which showed effective corporate income taxes in different years. Figure 7 showed much higher effective corporate income tax rates in 1977 than in 1988. Figure 11 shows almost the same effective corporate income tax rates under income-indexed 1977 and 1988 tax laws when the corporate profits share of GNP is held constant at 1988 levels. The higher effective corporate income tax rates in 1977 compared with 1988 as shown in Figure 7 are thus almost entirely the result of a higher corporate profits share in 1977 rather than of differences in the corporate income tax law.

Tables 11 and 12 show the distribution of effective tax rates for each type of tax in 1988 under the three different tax laws. It is important to remember that these results do not show the effect of the 1986 tax reform. Income-indexed 1984 tax law is not the law that would have been in effect if the 1986 act had not become law. In that case, the individual income tax schedule for 1988 would have been the 1984 schedule indexed for increases in consumer prices between 1984 and 1988. Because incomes are expected to grow faster than prices between 1984 and 1988, effective individual income tax rates under that law would be higher than those shown for income-indexed 1984 law in Tables 11 and 12.

Figure 11.

Effective Federal Tax Rates by Population Decile, 1988, Under Tax Laws Adjusted to 1988 Incomes



SOURCE: Congressional Budget Office tax simulation models.

NOTE: Families are ranked by the size of family income. Because family income includes the family's share of the corporate income tax, the ordering of families depends on the allocation of corporate taxes. The lowest decile excludes families with zero or negative incomes.

The effective tax rate is the ratio of taxes to family income in each income class.

TABLE 11. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE, WITH CONSTANT 1988 INCOMES: CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
Income-Indexed 1977 Tax Law					
First b/	-0.6	3.9	1.1	3.8	8.2
Second	-0.7	4.6	1.1	3.6	8.7
Third	1.5	6.8	1.3	2.2	11.8
Fourth	3.9	7.4	1.6	2.1	14.9
Fifth	5.8	7.7	1.7	1.6	16.8
Sixth	7.1	8.1	1.7	1.5	18.5
Seventh	8.5	8.0	1.8	1.4	19.6
Eighth	9.8	7.8	1.6	1.2	20.5
Ninth	11.3	7.2	1.7	1.1	21.4
Tenth	16.8	3.8	4.8	0.6	26.1
Top 5 percent	18.6	2.7	5.9	0.5	27.7
Top 1 percent	22.7	1.0	7.9	0.2	31.8
All Deciles c/	11.1	6.2	2.8	1.2	21.4
Income-Indexed 1984 Tax Law					
First b/	-0.5	4.6	0.8	5.7	10.6
Second	0.2	5.4	0.8	2.8	9.1
Third	2.7	7.9	0.9	2.1	13.6
Fourth	4.8	8.6	1.1	1.7	16.2
Fifth	6.4	9.0	1.2	1.4	18.0
Sixth	7.6	9.5	1.2	1.2	19.4
Seventh	8.5	9.6	1.2	1.1	20.4
Eighth	9.4	10.0	1.1	1.0	21.6
Ninth	10.6	9.7	1.2	0.9	22.4
Tenth	15.4	5.4	3.4	0.5	24.7
Top 5 percent	16.9	4.0	4.1	0.4	25.5
Top 1 percent	20.1	1.6	5.5	0.2	27.4
All Deciles c/	10.6	8.0	1.9	1.1	21.5
Actual 1988 Tax Law					
First b/	-0.8	5.0	1.1	4.5	9.7
Second	-0.4	5.9	1.0	2.1	8.6
Third	1.7	8.6	1.3	1.6	13.3
Fourth	4.1	9.4	1.6	1.4	16.5
Fifth	5.9	9.8	1.6	1.1	18.5
Sixth	7.2	10.4	1.6	1.0	20.2
Seventh	8.3	10.5	1.7	0.9	21.4
Eighth	9.0	10.9	1.6	0.8	22.3
Ninth	10.4	10.6	1.7	0.8	23.4
Tenth	15.5	6.0	4.7	0.4	26.6
Top 5 percent	16.9	4.4	5.7	0.4	27.4
Top 1 percent	19.7	1.8	7.7	0.2	29.3
All Deciles c/	10.4	8.7	2.7	0.9	22.7

SOURCE: Congressional Budget Office tax simulation models.
a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE 12. EFFECTIVE FEDERAL TAX RATES, BY POPULATION DECILE, WITH CONSTANT 1988 INCOMES: CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME

Decile a/	Individual Income Tax	Social Insurance Taxes	Corporate Income Tax	Excise Taxes	All Taxes
Income-Indexed 1977 Tax Law					
First b/	-0.6	3.7	1.3	3.7	8.1
Second	-0.7	4.2	1.4	3.5	8.5
Third	1.2	6.3	2.2	2.2	11.9
Fourth	3.7	7.1	2.5	2.0	15.3
Fifth	5.6	7.6	2.7	1.6	17.5
Sixth	7.0	7.8	2.9	1.5	19.2
Seventh	8.4	7.9	3.0	1.3	20.7
Eighth	9.7	7.8	3.2	1.2	21.9
Ninth	11.2	7.1	3.2	1.1	22.7
Tenth	17.3	4.0	2.6	0.7	24.4
Top 5 percent	19.4	2.9	2.3	0.5	25.1
Top 1 percent	24.3	1.1	1.9	0.3	27.5
All Deciles c/	11.1	6.2	2.8	1.2	21.3
Income-Indexed 1984 Tax Law					
First b/	-0.4	4.4	0.9	5.6	10.5
Second	0.1	4.9	1.0	2.8	8.8
Third	2.5	7.5	1.5	2.1	13.5
Fourth	4.7	8.3	1.7	1.7	16.5
Fifth	6.4	8.9	1.9	1.4	18.6
Sixth	7.5	9.3	2.0	1.2	20.0
Seventh	8.5	9.5	2.1	1.1	21.3
Eighth	9.4	10.0	2.2	1.0	22.6
Ninth	10.6	9.7	2.2	0.9	23.4
Tenth	15.6	5.7	1.8	0.6	23.7
Top 5 percent	17.4	4.3	1.6	0.4	23.8
Top 1 percent	21.1	1.7	1.3	0.3	24.4
All Deciles c/	10.6	8.0	1.9	1.1	21.6
Actual 1988 Tax Law					
First b/	-0.8	4.7	1.2	4.5	9.6
Second	-0.5	5.3	1.4	2.1	8.3
Third	1.5	8.0	2.1	1.6	13.3
Fourth	4.0	9.0	2.4	1.4	16.8
Fifth	5.8	9.6	2.6	1.1	19.2
Sixth	7.1	10.0	2.8	1.0	20.9
Seventh	8.2	10.3	2.9	0.9	22.3
Eighth	8.9	10.8	3.1	0.8	23.6
Ninth	10.3	10.5	3.1	0.8	24.7
Tenth	15.8	6.3	2.5	0.5	25.0
Top 5 percent	17.5	4.8	2.3	0.4	24.9
Top 1 percent	20.9	1.9	1.9	0.3	24.9
All Deciles c/	10.4	8.7	2.7	0.9	22.7

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

APPENDIXES

APPENDIX A

ADDITIONAL DETAIL ON THE DISTRIBUTION OF INCOME

Chapter IV showed the average income and the share of total family income received by each population decile. Tables A-1 through A-5 provide additional detail on the distribution of total and particular types of income. Table A-1 shows the lower income limits for each family income decile and for the top 5 percent and 1 percent of families. Tables A-2 and A-3 show the distribution of capital, labor, transfer, and other income among income groups under the two allocations of the corporate income tax. Families in the upper 20 percent of the income distribution received an equal or larger share of all four types of income in 1984 than in 1977. Families in the bottom 10 percent of the distribution received a smaller share of total income in 1984 primarily because their share of transfers dropped.

Tables A-4 and A-5 show the share of each group's total income from each income source. Transfer income is the largest share of total income for the first and second deciles. The percentage of income from transfers fell for both deciles between 1977 and 1984, and is projected to fall farther by 1988. For all other income deciles, labor income accounts for the largest share of total income in all years and for both allocations of the corporate income tax.

TABLE A-1. MINIMUM INCOME LEVEL IN EACH POPULATION DECILE, BY YEAR AND TREATMENT OF CORPORATE TAX

Decile a/	1977 Corporate Tax Allocated to		1984 Corporate Tax Allocated to		1988 Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
In Nominal Dollars						
First b/	0	0	0	0	0	0
Second	3,316	3,328	4,992	4,984	5,908	5,906
Third	5,647	5,670	8,689	8,740	10,370	10,470
Fourth	8,381	8,400	12,810	13,010	15,320	15,600
Fifth	11,110	11,290	17,250	17,400	20,530	20,770
Sixth	14,030	14,230	22,000	22,130	26,200	26,360
Seventh	17,150	17,530	27,410	27,580	32,580	32,860
Eighth	20,760	21,340	33,840	34,170	40,170	40,630
Ninth	25,390	26,030	42,450	43,050	50,400	51,270
Tenth	33,300	33,910	57,020	57,540	68,000	68,780
Top 5 percent	42,530	42,770	73,860	74,020	87,640	88,120
Top 1 percent	85,600	78,990	144,150	143,070	185,230	179,670
In 1987 Dollars						
First b/	0	0	0	0	0	0
Second	6,232	6,254	5,473	5,465	5,618	5,616
Third	10,613	10,656	9,527	9,583	9,861	9,956
Fourth	15,751	15,786	14,045	14,265	14,568	14,835
Fifth	20,879	21,218	18,913	19,078	19,523	19,751
Sixth	26,367	26,743	24,121	24,264	24,914	25,067
Seventh	32,231	32,945	30,053	30,240	30,981	31,248
Eighth	39,015	40,105	37,103	37,465	38,199	38,636
Ninth	47,716	48,919	46,544	47,201	47,927	48,754
Tenth	62,582	63,728	62,519	63,089	64,664	65,405
Top 5 percent	79,928	80,379	80,982	81,158	83,340	83,796
Top 1 percent	160,871	148,449	158,051	156,866	176,142	170,854

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

TABLE A-2. DISTRIBUTION OF FAMILY INCOME FROM EACH SOURCE OF INCOME, BY POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME (In percent)

Decile a/	Labor	Capital	Transfer	Other	Total
		1977			
First b/	0.3	0.4	9.5	1.5	1.1
Second	1.2	1.1	17.2	4.2	2.5
Third	2.9	2.3	15.2	7.8	3.9
Fourth	5.1	3.4	11.3	9.7	5.4
Fifth	7.1	4.4	10.0	10.2	7.1
Sixth	9.2	5.2	9.4	11.6	8.7
Seventh	12.0	5.4	7.5	10.3	10.6
Eighth	14.9	6.1	6.3	11.4	12.9
Ninth	18.6	9.6	6.2	13.4	16.2
Tenth	29.1	61.7	6.9	19.5	31.9
Top 5 percent	17.4	53.0	3.7	11.9	21.5
Top 1 percent	5.5	33.4	0.8	2.0	9.2
All Deciles c/	100.0	100.0	100.0	100.0	100.0
		1984			
First b/	0.3	0.3	7.4	1.5	0.9
Second	1.2	0.8	15.3	3.7	2.3
Third	2.9	1.7	13.3	6.4	3.6
Fourth	4.6	2.8	12.2	8.7	5.0
Fifth	6.5	3.8	11.0	10.3	6.5
Sixth	8.8	4.7	9.6	10.4	8.2
Seventh	11.2	6.1	8.9	11.2	10.1
Eighth	14.6	6.9	7.8	10.8	12.6
Ninth	19.0	9.6	6.6	13.7	16.3
Tenth	31.9	63.0	7.3	22.6	35.0
Top 5 percent	19.7	54.8	4.0	15.0	24.3
Top 1 percent	7.4	36.9	0.8	4.0	11.8
All Deciles c/	100.0	100.0	100.0	100.0	100.0
		1988			
First b/	0.3	0.3	7.9	1.4	0.9
Second	1.2	0.8	15.5	3.5	2.2
Third	3.0	1.7	13.1	5.8	3.6
Fourth	4.6	2.8	11.8	8.2	5.0
Fifth	6.5	3.8	10.7	10.0	6.5
Sixth	8.7	4.8	9.6	9.9	8.1
Seventh	11.0	6.2	8.7	11.5	10.0
Eighth	14.2	7.1	7.9	11.4	12.5
Ninth	18.6	9.8	6.7	13.9	16.1
Tenth	32.9	62.3	7.5	24.0	35.7
Top 5 percent	21.1	53.7	4.0	15.4	25.1
Top 1 percent	8.8	36.2	0.8	3.4	12.5
All Deciles c/	100.0	100.0	100.0	100.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE A-3. DISTRIBUTION OF FAMILY INCOME FROM EACH SOURCE OF INCOME, BY POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME (In percent)

Decile a/	Labor	Capital	Transfer	Other	Total
		1977			
First b/	0.3	0.6	9.9	1.5	1.1
Second	1.1	1.5	17.8	4.3	2.5
Third	2.7	3.2	15.9	8.3	3.9
Fourth	4.7	4.5	12.4	10.9	5.5
Fifth	6.9	5.3	10.2	11.0	7.1
Sixth	9.2	5.8	9.1	12.2	8.9
Seventh	12.0	5.6	6.9	9.9	10.9
Eighth	14.8	7.1	6.1	11.3	13.2
Ninth	18.8	9.5	5.6	12.4	16.6
Tenth	30.0	56.5	5.9	17.7	30.6
Top 5 percent	18.2	48.3	3.2	10.8	20.1
Top 1 percent	5.9	30.5	0.7	2.0	8.1
All Deciles c/	100.0	100.0	100.0	100.0	100.0
		1984			
First b/	0.3	0.4	7.5	1.5	0.9
Second	1.1	0.9	15.8	3.9	2.3
Third	2.7	2.1	14.0	6.7	3.6
Fourth	4.5	3.1	12.3	9.1	5.0
Fifth	6.5	4.1	11.0	10.2	6.6
Sixth	8.6	5.2	10.1	10.8	8.3
Seventh	11.2	6.1	8.5	11.5	10.2
Eighth	14.6	6.9	7.4	10.9	12.8
Ninth	19.0	9.6	6.4	13.0	16.4
Tenth	32.5	61.3	6.5	21.8	34.4
Top 5 percent	20.2	53.1	3.5	14.3	23.7
Top 1 percent	7.5	36.8	0.8	4.0	11.2
All Deciles c/	100.0	100.0	100.0	100.0	100.0
		1988			
First b/	0.3	0.4	7.9	1.3	0.9
Second	1.1	1.0	16.3	3.6	2.2
Third	2.8	2.2	13.7	6.1	3.6
Fourth	4.5	3.3	12.2	8.7	5.0
Fifth	6.3	4.4	10.8	10.2	6.5
Sixth	8.5	5.4	9.9	10.6	8.2
Seventh	10.9	6.4	8.6	11.5	10.2
Eighth	14.3	6.9	7.3	11.2	12.7
Ninth	18.6	9.8	6.1	13.6	16.4
Tenth	33.6	59.8	6.6	22.5	34.9
Top 5 percent	21.6	51.5	3.4	14.9	24.2
Top 1 percent	8.9	35.8	0.7	3.3	11.8
All Deciles c/	100.0	100.0	100.0	100.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE A-4. DISTRIBUTION OF FAMILY INCOME BY SOURCE OF INCOME FOR EACH POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME (In percent)

Decile a/	Labor	Capital	Transfer	Other	Total
		1977			
First b/	23.5	5.8	66.1	4.6	100.0
Second	36.3	6.5	51.7	5.5	100.0
Third	55.5	8.8	29.2	6.6	100.0
Fourth	69.3	9.3	15.6	5.8	100.0
Fifth	75.3	9.3	10.7	4.8	100.0
Sixth	78.8	8.7	8.0	4.4	100.0
Seventh	83.9	7.6	5.3	3.2	100.0
Eighth	86.4	7.1	3.7	2.9	100.0
Ninth	85.7	8.7	2.9	2.7	100.0
Tenth	67.8	28.6	1.6	2.0	100.0
Top 5 percent	60.4	36.4	1.3	1.8	100.0
Top 1 percent	44.9	53.7	0.7	0.7	100.0
All Deciles c/	74.5	14.8	7.5	3.3	100.0
		1984			
First b/	24.4	5.5	62.9	7.1	100.0
Second	37.2	6.1	49.9	6.9	100.0
Third	57.5	8.0	27.1	7.4	100.0
Fourth	65.5	9.6	17.8	7.2	100.0
Fifth	71.2	9.9	12.3	6.5	100.0
Sixth	76.5	9.7	8.5	5.2	100.0
Seventh	78.9	10.2	6.4	4.6	100.0
Eighth	82.6	9.3	4.5	3.5	100.0
Ninth	83.5	10.1	3.0	3.5	100.0
Tenth	65.2	30.6	1.5	2.7	100.0
Top 5 percent	58.0	38.3	1.2	2.5	100.0
Top 1 percent	45.0	53.2	0.5	1.4	100.0
All Deciles c/	71.6	17.0	7.3	4.1	100.0
		1988			
First b/	23.9	6.7	62.4	7.0	100.0
Second	39.9	6.3	47.0	6.8	100.0
Third	60.3	7.8	24.8	7.1	100.0
Fourth	67.3	9.5	16.1	7.2	100.0
Fifth	72.2	9.7	11.3	6.8	100.0
Sixth	76.9	9.8	8.0	5.4	100.0
Seventh	78.8	10.3	5.9	5.0	100.0
Eighth	82.3	9.4	4.3	4.0	100.0
Ninth	83.4	10.0	2.8	3.8	100.0
Tenth	66.7	28.9	1.4	3.0	100.0
Top 5 percent	60.7	35.5	1.1	2.7	100.0
Top 1 percent	50.5	47.8	0.4	1.2	100.0
All Deciles c/	72.3	16.6	6.8	4.4	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE A-5. DISTRIBUTION OF FAMILY INCOME BY SOURCE OF INCOME FOR EACH POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME (In percent)

Decile a/	Labor	Capital	Transfer	Other	Total
		1977			
First b/	21.3	5.8	68.4	4.5	100.0
Second	34.1	6.6	53.5	5.7	100.0
Third	53.6	9.0	30.3	7.0	100.0
Fourth	67.7	9.0	16.8	6.5	100.0
Fifth	76.1	8.1	10.7	5.1	100.0
Sixth	80.8	7.1	7.6	4.5	100.0
Seventh	86.6	5.6	4.8	3.0	100.0
Eighth	87.9	5.8	3.5	2.8	100.0
Ninth	88.7	6.3	2.5	2.5	100.0
Tenth	76.6	20.1	1.4	1.9	100.0
Top 5 percent	70.8	26.2	1.2	1.8	100.0
Top 1 percent	57.2	41.3	0.7	0.8	100.0
All Deciles c/	78.3	10.9	7.5	3.3	100.0
		1984			
First b/	23.8	6.1	63.0	7.0	100.0
Second	35.5	6.1	51.3	7.1	100.0
Third	55.3	8.6	28.5	7.7	100.0
Fourth	65.4	9.2	17.9	7.4	100.0
Fifth	72.2	9.2	12.2	6.4	100.0
Sixth	76.3	9.4	8.9	5.4	100.0
Seventh	80.4	8.9	6.0	4.6	100.0
Eighth	84.2	8.1	4.2	3.5	100.0
Ninth	85.2	8.7	2.9	3.3	100.0
Tenth	69.5	26.5	1.4	2.6	100.0
Top 5 percent	63.0	33.4	1.1	2.5	100.0
Top 1 percent	49.2	48.9	0.5	1.5	100.0
All Deciles c/	73.7	14.9	7.3	4.1	100.0
		1988			
First b/	25.0	5.8	62.3	6.8	100.0
Second	37.3	6.3	49.3	7.1	100.0
Third	58.2	8.4	25.9	7.5	100.0
Fourth	66.8	9.1	16.5	7.6	100.0
Fifth	72.6	9.3	11.2	6.9	100.0
Sixth	77.1	9.1	8.1	5.7	100.0
Seventh	80.7	8.7	5.7	5.0	100.0
Eighth	84.7	7.5	3.9	3.9	100.0
Ninth	85.5	8.3	2.5	3.7	100.0
Tenth	72.1	23.8	1.3	2.8	100.0
Top 5 percent	66.9	29.5	1.0	2.7	100.0
Top 1 percent	56.4	42.0	0.4	1.2	100.0
All Deciles c/	75.0	13.9	6.8	4.4	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

APPENDIX B

ADDITIONAL DETAIL ON THE DISTRIBUTION OF FEDERAL TAXES

Chapter V presented effective tax rates by population deciles for1977, 1984, and 1988. Tables B-1 through B-4 show additional detail on the distribution of taxes. Tables B-1 and B-2 show the share of federal taxes paid by each income group for the two alternative allocations of the corporate income tax. Shares of income before and after federal taxes are also included in the tables. Care should be used in comparing tax shares for different years because shares are determined both by the distribution of income and by tax laws.

Tables B-3 and B-4 show how the total federal tax bill for each income group is divided between the major revenue sources. In 1977 social insurance taxes accounted for the largest share of taxes for families in the lowest 60 percent of the income distribution. In 1988 social insurance taxes will account for the largest share of taxes for all groups except for families in the highest-income decile.

TABLE B-1. DISTRIBUTION OF FAMILY INCOME AND OF FEDERAL TAX PAYMENTS BY POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME (In percent)

Decile a/	Family Income		Federal Taxes Paid				
	Before Tax	After Tax	Individual Income	Social Insurance	Excises	Corporate Income	All Taxes
			1977				
First b/	1.1	1.3	-0.1	0.6	3.2	0.4	0.4
Second	2.5	2.9	0.0	1.6	6.6	1.0	1.0
Third	3.9	4.4	0.6	3.7	6.6	2.2	2.1
Fourth	5.4	5.9	2.1	6.2	8.5	3.3	3.8
Fifth	7.1	7.5	4.0	8.6	8.8	4.2	5.6
Sixth	8.7	9.1	6.1	10.8	10.1	5.0	7.5
Seventh	10.6	10.9	8.8	13.6	11.3	5.3	9.7
Eighth	12.9	13.1	12.3	15.9	12.4	6.0	12.3
Ninth	16.2	16.2	17.1	18.5	14.2	9.5	16.1
Tenth	31.9	29.1	48.9	20.3	17.8	62.8	41.3
Top 5 percent	21.5	18.9	36.5	10.0	9.5	54.0	30.4
Top 1 percent	9.2	7.2	19.2	1.7	2.1	34.3	15.8
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0
			1984				
First b/	0.9	1.0	0.0	0.5	4.7	0.3	0.4
Second	2.3	2.6	0.1	1.4	5.6	0.9	0.9
Third	3.6	4.0	0.9	3.4	7.0	1.8	2.2
Fourth	5.0	5.4	2.3	5.3	8.0	3.0	3.7
Fifth	6.5	6.8	3.9	7.3	8.7	4.0	5.4
Sixth	8.2	8.4	6.1	9.7	9.5	5.0	7.5
Seventh	10.1	10.3	8.4	12.2	10.7	6.4	9.7
Eighth	12.6	12.6	11.6	15.9	12.1	7.3	12.8
Ninth	16.3	16.0	16.8	19.7	14.1	10.1	17.1
Tenth	35.0	33.6	49.9	24.5	17.8	61.1	40.1
Top 5 percent	24.3	23.2	37.6	12.5	9.8	52.6	28.5
Top 1 percent	11.8	11.0	20.9	2.4	2.6	34.6	14.6
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0
			1988				
First b/	0.9	1.0	-0.1	0.5	4.5	0.3	0.4
Second	2.2	2.6	-0.1	1.5	5.5	0.9	0.8
Third	3.6	4.0	0.6	3.5	6.7	1.7	2.1
Fourth	5.0	5.4	2.0	5.4	7.9	2.9	3.6
Fifth	6.5	6.8	3.7	7.3	8.4	3.8	5.3
Sixth	8.1	8.4	5.7	9.7	9.4	4.9	7.3
Seventh	10.0	10.2	8.0	12.1	10.7	6.3	9.5
Eighth	12.5	12.5	10.9	15.7	12.1	7.2	12.3
Ninth	16.1	16.0	16.1	19.6	14.3	9.9	16.7
Tenth	35.7	33.9	53.2	24.5	18.6	61.7	41.9
Top 5 percent	25.1	23.5	41.0	12.7	10.3	53.0	30.4
Top 1 percent	12.5	11.5	23.8	2.5	3.5	35.4	16.2
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE B-2. DISTRIBUTION OF FAMILY INCOME AND OF FEDERAL TAX PAYMENTS BY POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME (In percent)

Decile a/	Family Income		Federal Taxes Paid				
	Before Tax	After Tax	Individual Income	Social Insurance	Excises	Corporate Income	All Taxes
			1977				
First b/	1.1	1.3	0.0	0.5	3.2	0.4	0.4
Second	2.5	2.9	0.0	1.4	6.6	1.1	0.9
Third	3.9	4.5	0.5	3.4	6.5	2.7	2.1
Fourth	5.5	6.0	2.0	5.8	8.5	4.7	3.9
Fifth	7.1	7.5	3.9	8.4	8.7	6.9	6.0
Sixth	8.9	9.1	6.1	10.8	10.2	9.2	8.2
Seventh	10.9	10.8	8.8	13.8	11.2	12.2	11.0
Eighth	13.2	13.1	12.1	15.8	12.4	15.1	13.7
Ninth	16.6	16.2	17.2	18.7	14.3	19.1	17.8
Tenth	30.6	29.1	49.3	21.2	17.9	28.4	35.9
Top 5 percent	20.1	18.9	36.9	10.6	9.7	16.5	24.3
Top 1 percent	8.1	7.2	19.5	1.8	2.1	4.8	10.9
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0
			1984				
First b/	0.9	1.0	0.0	0.5	4.7	0.4	0.4
Second	2.3	2.6	0.0	1.3	5.6	1.1	0.9
Third	3.6	4.0	0.9	3.2	7.0	2.7	2.2
Fourth	5.0	5.4	2.3	5.1	8.0	4.4	3.8
Fifth	6.6	6.9	3.9	7.3	8.7	6.4	5.6
Sixth	8.3	8.5	6.0	9.5	9.5	8.6	7.7
Seventh	10.2	10.3	8.4	12.2	10.7	11.2	10.2
Eighth	12.8	12.6	11.7	15.9	12.2	14.7	13.6
Ninth	16.4	16.0	16.9	19.8	14.1	19.1	18.0
Tenth	34.4	33.6	50.0	25.0	17.8	31.5	37.5
Top 5 percent	23.7	23.2	37.6	13.0	9.8	19.3	25.4
Top 1 percent	11.2	11.0	21.0	2.5	2.6	6.9	11.9
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0
			1988				
First b/	0.9	1.0	-0.1	0.5	4.4	0.4	0.4
Second	2.2	2.7	-0.1	1.4	5.5	1.1	0.8
Third	3.6	4.0	0.5	3.3	6.7	2.8	2.1
Fourth	5.0	5.4	1.9	5.2	7.9	4.5	3.7
Fifth	6.5	6.8	3.7	7.2	8.5	6.4	5.5
Sixth	8.2	8.4	5.7	9.5	9.4	8.5	7.6
Seventh	10.2	10.2	8.0	12.0	10.7	11.0	10.0
Eighth	12.7	12.5	10.9	15.8	12.0	14.5	13.2
Ninth	16.4	15.9	16.3	19.7	14.3	18.7	17.8
Tenth	34.9	33.8	53.2	25.2	18.6	32.0	38.6
Top 5 percent	24.2	23.5	40.9	13.2	10.4	20.1	26.6
Top 1 percent	11.8	11.5	23.8	2.6	3.6	8.1	13.0
All Deciles c/	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

TABLE B-3.- DISTRIBUTION OF TOTAL FEDERAL TAXES PAID, BY TYPE OF TAX, FOR EACH POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO CAPITAL INCOME (In percent)

Decile a/	Individual Income Tax	Social Insurance Taxes	Excise Taxes	Corporate Income Tax	All Taxes
		1977			
First b/	-6.4	43.7	44.8	17.9	100.0
Second	-0.1	45.7	36.5	17.9	100.0
Third	14.9	50.0	17.2	17.8	100.0
Fourth	27.0	46.2	12.2	14.6	100.0
Fifth	34.5	44.1	8.6	12.8	100.0
Sixth	39.8	41.5	7.5	11.3	100.0
Seventh	44.1	40.2	6.5	9.2	100.0
Eighth	48.7	37.3	5.6	8.4	100.0
Ninth	51.8	33.2	4.9	10.1	100.0
Tenth	57.6	14.1	2.4	25.9	100.0
Top 5 percent	58.5	9.4	1.7	30.3	100.0
Top 1 percent	59.2	3.1	0.7	37.0	100.0
All Deciles c/	48.7	28.8	5.5	17.0	100.0
		1984			
First b/	-4.1	42.8	54.4	6.9	100.0
Second	3.4	57.6	29.8	9.2	100.0
Third	20.8	56.4	15.1	7.8	100.0
Fourth	30.0	51.9	10.3	7.8	100.0
Fifth	35.3	49.7	7.7	7.2	100.0
Sixth	39.6	47.9	6.1	6.5	100.0
Seventh	42.1	46.2	5.3	6.4	100.0
Eighth	44.3	45.6	4.5	5.5	100.0
Ninth	47.9	42.4	4.0	5.7	100.0
Tenth	60.7	22.4	2.1	14.8	100.0
Top 5 percent	64.3	16.1	1.6	17.9	100.0
Top 1 percent	70.0	6.1	0.9	23.0	100.0
All Deciles c/	48.7	36.8	4.8	9.7	100.0
		1988			
First b/	-8.7	51.0	46.4	11.3	100.0
Second	-5.2	68.1	24.9	12.2	100.0
Third	12.9	65.1	12.1	9.8	100.0
Fourth	25.1	56.9	8.3	9.6	100.0
Fifth	32.0	53.1	6.1	8.7	100.0
Sixth	35.7	51.3	4.9	8.1	100.0
Seventh	38.7	49.0	4.3	8.0	100.0
Eighth	40.3	48.9	3.7	7.0	100.0
Ninth	44.3	45.3	3.3	7.1	100.0
Tenth	58.1	22.5	1.7	17.7	100.0
Top 5 percent	61.7	16.1	1.3	20.9	100.0
Top 1 percent	67.0	6.0	0.8	26.2	100.0
All Deciles c/	45.7	38.4	3.8	12.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.
b. Excludes families with zero or negative incomes.
c. Includes families with zero or negative incomes not shown separately.

TABLE B-4. DISTRIBUTION OF TOTAL FEDERAL TAXES PAID, BY TYPE OF TAX, FOR EACH POPULATION DECILE, WITH CORPORATE INCOME TAX ALLOCATED TO LABOR INCOME (In percent)

Decile a/	Individual Income Tax	Social Insurance Taxes	Excise Taxes	Corporate Income Tax	All Taxes
		1977			
First b/	-4.7	40.0	46.0	18.7	100.0
Second	-1.3	42.9	38.6	19.9	100.0
Third	12.6	47.6	17.5	22.3	100.0
Fourth	24.8	42.5	12.1	20.6	100.0
Fifth	31.8	40.3	8.1	19.8	100.0
Sixth	36.0	38.0	6.9	19.1	100.0
Seventh	39.2	36.2	5.7	18.9	100.0
Eighth	43.1	33.1	5.0	18.8	100.0
Ninth	47.1	30.2	4.4	18.3	100.0
Tenth	66.8	17.0	2.8	13.4	100.0
Top 5 percent	73.7	12.5	2.2	11.5	100.0
Top 1 percent	86.6	4.8	1.1	7.5	100.0
All Deciles c/	48.7	28.8	5.5	17.0	100.0
		1984			
First b/	-3.6	41.3	53.4	8.9	100.0
Second	2.7	55.0	30.6	11.7	100.0
Third	19.3	53.6	15.3	11.8	100.0
Fourth	29.1	49.7	10.1	11.2	100.0
Fifth	33.9	47.6	7.4	11.0	100.0
Sixth	37.9	45.4	5.9	10.8	100.0
Seventh	40.3	44.0	5.0	10.7	100.0
Eighth	42.1	43.1	4.3	10.5	100.0
Ninth	45.6	40.4	3.7	10.3	100.0
Tenth	65.0	24.5	2.3	8.2	100.0
Top 5 percent	72.1	18.8	1.8	7.4	100.0
Top 1 percent	85.7	7.6	1.1	5.6	100.0
All Deciles c/	48.7	36.8	4.8	9.7	100.0
		1988			
First b/	-8.2	49.1	46.3	12.8	100.0
Second	-5.7	63.8	25.6	16.4	100.0
Third	11.4	60.6	12.1	15.9	100.0
Fourth	23.9	53.6	8.1	14.4	100.0
Fifth	30.3	50.1	5.8	13.8	100.0
Sixth	34.1	47.8	4.7	13.4	100.0
Seventh	36.7	46.1	4.1	13.1	100.0
Eighth	37.6	45.8	3.5	13.1	100.0
Ninth	41.8	42.5	3.1	12.6	100.0
Tenth	63.1	25.1	1.8	10.0	100.0
Top 5 percent	70.3	19.1	1.5	9.1	100.0
Top 1 percent	83.8	7.7	1.0	7.5	100.0
All Deciles c/	45.7	38.4	3.8	12.0	100.0

SOURCE: Congressional Budget Office tax simulation models.

a. Ranked by size of family income.

b. Excludes families with zero or negative incomes.

c. Includes families with zero or negative incomes not shown separately.

APPENDIX C

GINI COEFFICIENTS AND SUITS INDEXES

The Gini coefficient is a commonly used measure of the equality of the distribution of income. The calculation of the coefficient is based on the Lorenz curve, which graphs the cumulative percentage of income against the cumulative percentage of the population.1/ Figure C-1 shows a Lorenz curve. The Gini coefficient is measured by dividing the area bounded by the 45- degree line and the Lorenz curve (Area A in the diagram), by the area of the triangle underneath the 45-degree line (Area A plus Area B). The coefficient thus ranges from 0 when income is equally distributed (each percentage of the population receiving an equivalent percentage of income) to 1 at perfect inequality (all income being received by the wealthiest family). The greater the distributional inequality, the higher the Gini coefficient.

Gini coefficients can be calculated for the distributions of both pretax income and after-tax income. The difference between the pretax and after-tax Gini coefficients is one measure of the degree to which a tax system is progressive (that is, the degree to which it shifts the distribution of income in favor of members of the population with lower incomes).2/ The larger the absolute difference between the after-tax and pretax Gini coefficients, the more redistributive is the tax system.

A measure of the equality of the distribution of tax payments can be constructed that is related to the Lorenz curve. For this measure, called the Suits index, a tax concentration curve (analogous to the Lorenz curve) is plotted, showing the accumulated percentage of the

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1. For more information, see Donald W. Kiefer, "Changing Progressivity of the Federal, Individual Income Tax and Social Security Tax," Congressional Research Service Report No. 87-723E (August 31, 1987).

2. This measure is referred to as the Reynolds-Smolensky Index of distributional progressivity. See Donald W. Kiefer, "Distributional Tax Progressivity Indexes," *National Tax Journal*, vol. xxxvii, no. 4 (December 1984), p. 498.

Figure C-1.
Lorenz Curve

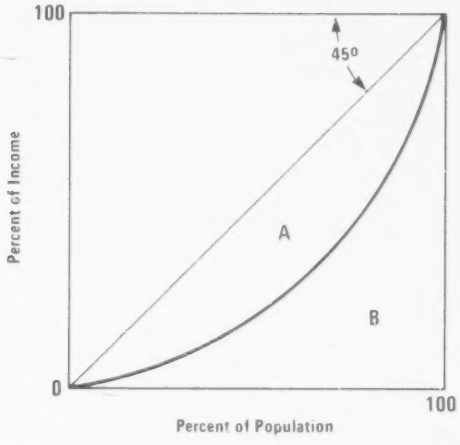
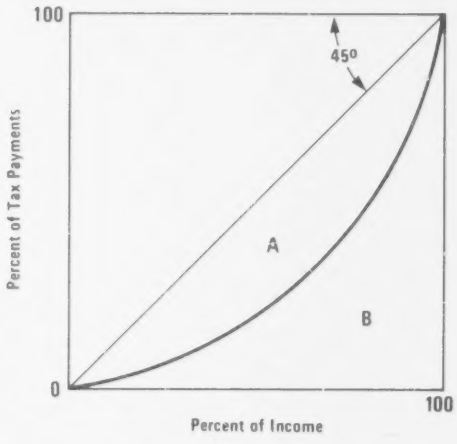


Figure C-2.
Tax Concentration Curve



total tax burden measured against the accumulated percentage of total income. Figure C-2 shows such a tax concentration curve. The Suits index is the ratio of the area between the 45-degree line and the concentration curve to the total area underneath the 45-degree line (again, area A over the sum of area A and B).3/ If the tax is proportional, this index has a value of 0. If the total tax burden is paid by those in the highest income bracket, the index has a value of 1. Thus, the more progressive the tax, the higher the Suits index. For a regressive tax (with lower-income families paying a higher percentage of the tax than their percentage of total income), the tax concentration curve lies above the 45-degree line and the value of the Suits index is negative. Because the value of the Suits index depends on the pretax distribution of income, it can change over years even if the tax structure remains the same.

Table C-1 shows pretax and post-tax Gini coefficients, differences between the Gini coefficients, and Suits indexes for 1977, 1984, and 1988. The indexes are shown under the two alternative methods for allocating the corporate income tax. The top set of numbers shows the

3. This index is described in Daniel B. Suits, "Measurement of Tax Progressivity," *American Economic Review*, vol. 67, no. 4 (September 1977), pp. 747-752.

TABLE C-1. GINI COEFFICIENTS AND SUITS INDEXES

Indexes At Actual Income Levels

	1977		1984		1988	
	Corporate Tax Allocated to		Corporate Tax Allocated to		Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
Pretax Gini Coefficient	.4502	.4427	.4884	.4845	.4940	.4890
Post-Tax Gini Coefficient	.4185	.4185	.4700	.4700	.4724	.4724
Difference	.0317	.0242	.0184	.0145	.0216	.0165
Suits Index	.1452	.1025	.0854	.0630	.0980	.0696

Indexes With Income Held Constant at 1984 Levels

	Income-Indexed 1977 Law		Actual 1984 Law		Income-Indexed 1988 Law	
	Corporate Tax Allocated to		Corporate Tax Allocated to		Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
Pretax Gini Coefficient	.4884	.4845	.4884	.4845	.4884	.4844
Post-Tax Gini Coefficient	.4640	.4657	.4700	.4700	.4649	.4666
Difference	.0244	.0188	.0184	.0145	.0234	.0179
Suits Index	.1197	.0868	.0854	.0630	.1018	.0720

Indexes With Income Held Constant at 1988 Levels

	Income-Indexed 1977 Law		Income-Indexed 1984 Law		Actual 1988 Law	
	Corporate Tax Allocated to		Corporate Tax Allocated to		Corporate Tax Allocated to	
	Capital Income	Labor Income	Capital Income	Labor Income	Capital Income	Labor Income
Pretax Gini Coefficient	.4940	.4890	.4940	.4890	.4940	.4890
Post-Tax Gini Coefficient	.4703	.4705	.4765	.4747	.4724	.4724
Difference	.0237	.0185	.0175	.0142	.0216	.0165
Suits Index	.1210	.0894	.0847	.0643	.0980	.0696

indexes at the actual (or expected) level and distribution of income for the three years. The middle set of numbers shows the indexes for the 1977, 1984, and 1988 tax laws using the 1984 distribution of income. The bottom set of numbers shows the indexes for the three tax laws with the distribution of income expected in 1988. Under either allocation of the corporate tax, the differences in the Gini coefficients and the Suits indexes are the largest for the 1977 law, indicating that it is the most progressive of the three tax laws examined. The difference between the 1977 law and the other two laws is larger when incomes are allowed to vary than when incomes are held constant at either the 1984 or the 1988 levels. The 1984 tax system shows the smallest differences in the Gini coefficients and the smallest Suits indexes, indicating that it is less progressive than either the 1977 or the 1988 law.

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